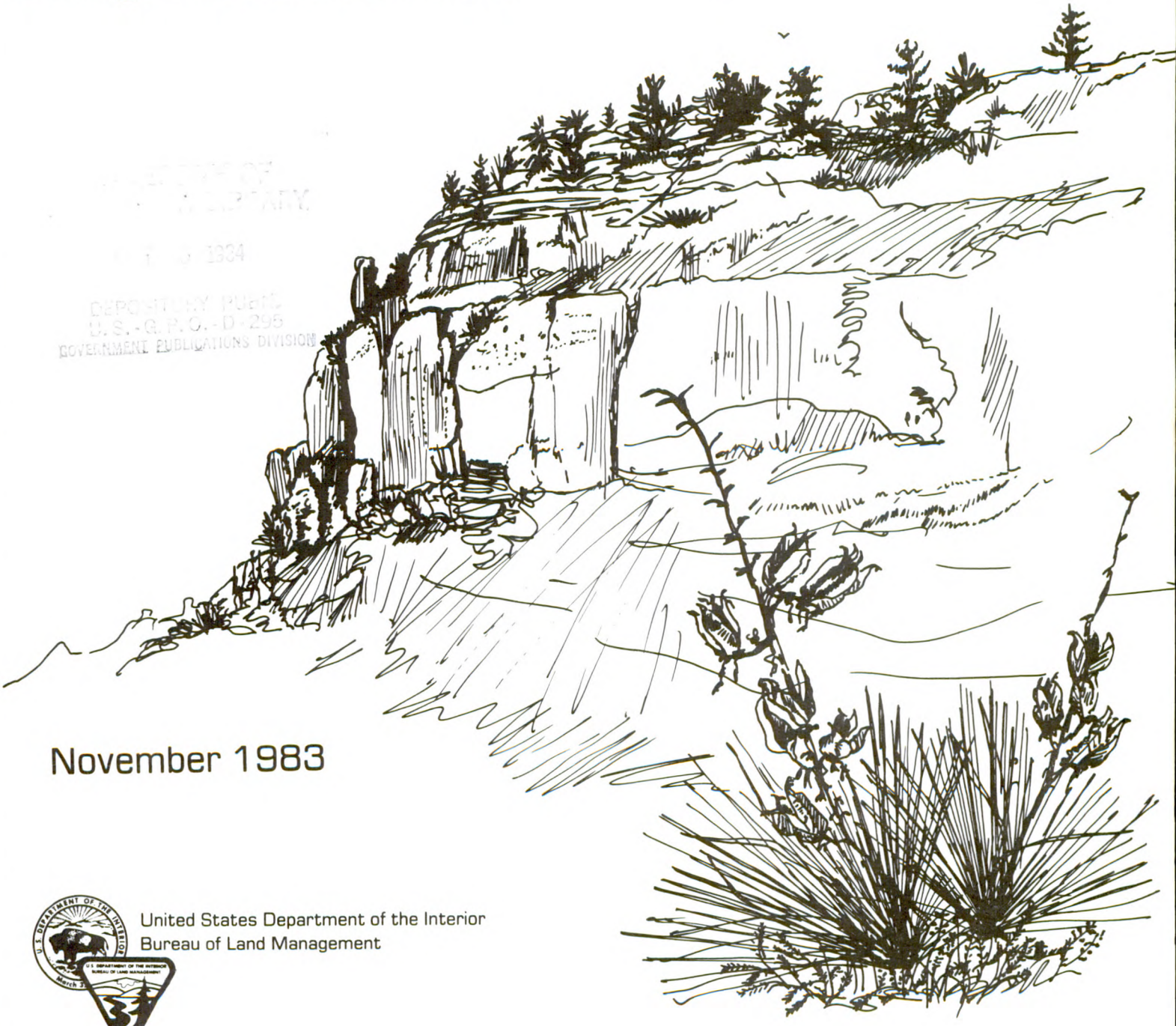
I1.98:B49/final

FINAL

Environmental Impact Statement

RESOURCE MANAGEMENT PLAN
Billings Resource Area



DEPOSITORY ITEM
U.S. G.P.O. D-295
GOVERNMENT PUBLICATIONS DIVISION

November 1983

United States Department of the Interior
Bureau of Land Management

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BLM-MT-ES-84-002-4410

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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IN REPLY REFER TO:

United States Department of the Interior
BUREAU OF LAND MANAGEMENT

Miles City District Office
West of Miles City — P.O. Box 940
Miles City, Montana 59301

November 1, 1983

Enclosed for your review is the final environmental impact statement (FEIS) for the Billings Resource Area Management Plan. The draft environmental impact statement (DEIS) was published in April 1983, and was followed by a 90-day public comment period. Changes based upon public comments have been incorporated into this document and all portions of the draft have been reprinted in order to portray those changes. This FEIS contains the proposed resource management plan, which is a refinement of the preferred alternative presented in the draft. The proposed plan is the BLM's proposed action.

With the exception of certain wilderness recommendations, all parts of this proposed plan may be protested. A separate wilderness environmental impact statement is required and will be prepared for public release by early spring 1984. Non-wilderness related protests should be sent to the Director (202), Bureau of Land Management, 1800 C Street NW, Washington, D.C. 20240, within the official 30-day protest period ending December 30, 1983. Protest statements should contain the following information:

The name, mailing address, telephone number, and interest of the person filing the protest.

A statement of the issue or issues being protested.

A statement of the part or parts being protested.

A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record.

A short concise statement explaining why the BLM Miles City District Manager's decision is wrong.

At the end of the 30-day protest period, the proposed plan, excluding any portions under protest, shall become the final. The effective date of plan implementation is March 1, 1984. Approval shall be withheld on any portion of the plan under protest until final action has been completed on such protest. The Final Resource Management Plan and record of decision will be published in mid 1984.

Sincerely,

Ray Brubaker

Ray Brubaker, District Manager

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FINAL

Environmental Impact Statement

RESOURCE MANAGEMENT PLAN

Billings Resource Area

Prepared by

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

November 1983

STATE DIRECTOR
MONTANA STATE OFFICE

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ENVIRONMENTAL IMPACT STATEMENT

Draft( ) Final (X)

BILLINGS RESOURCE AREA
BILLINGS, MONTANA

Lead Agency

U.S. Department of the Interior, Bureau of Land Management

Type of Action

Administrative (X) Legislative( )

ABSTRACT

This final environmental impact statement (FEIS) describes and analyzes the proposed Resource Management Plan for the Billings Resource Area. It was developed following a 90-day review of the draft environmental impact statement (DEIS), which described and analyzed four alternatives for managing the Billings Resource Area. The final resource management plan will be published with the record of decision in mid-1984. The effective date of plan implementation is March 1, 1984.

For further information regarding this environmental impact statement:

Project Manager
Bureau of Land Management
Billings Resource Area
810 East Main
Billings, Montana 59105
Telephone: (406) 657-6262

Date by Which Protests Must be Received: December 30, 1983

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Summary

This final Billings Resource Area Management Plan/ Environmental Impact Statement (FEIS) presents four alternatives, including the Bureau of Land Management's (BLM's) Proposed Land Use Plan, for managing the public land resources in an eight county area of southcentral Montana. The BLM Billings Resource Area Office manages an area encompassing 425,336 surface acres of public land and 906,084 acres of mineral ownership in Carbon, Big Horn, Golden Valley, Musselshell, Stillwater, Sweet Grass, Wheatland and Yellowstone Counties, Montana. The resource area also manages 6,340 acres in Big Horn County, Wyoming, within the Pryor Mountain Wild Horse Range.

This document consists of five chapters. Chapter 1 is a summarization of the planning process and the major issues identified through the public involvement process and by BLM resource specialists. Chapter 1 also discusses seven ongoing resource programs that will not be affected and are not examined elsewhere in this document as well as the management responsibilities common to all alternatives.

Chapter 2 presents the four alternative land use plans involving 13 issue areas. The issues, or problem areas, discussed in this chapter are grazing management, wild horse management, wildlife management, timber management, coal leasing, oil and gas leasing, land tenure adjustment, classifications under the Classification and Multiple Use Act of 1964, recreational access, off-road vehicle use, environmental education, wild horse interpretation and the wilderness study of selected lands.

The four alternatives are presented utilizing a common theme or scenario for analysis purposes. These themes are:

1. BLM's Proposed Land Use Plan. This management alternative is a selection of one, or portions of the other three alternatives which presents the best mix of resource considerations and favorable economic and social factors. The proposed plan in this FEIS is a modified version of the Preferred Alternative presented in the draft environmental impact statement printed in April 1983, and was significantly shaped by public reaction to the draft.

2. Continuation of Existing Management Alternative. This alternative level would maintain the present management direction, while responding to the requirements of new regulations and changing policies. This alternative is the no action alternative required by regulations of the Council on Environmental Quality.

3. Low Level Management Alternative. This alternative would place fewer restrictions on development and would result in a lesser degree of protection of resource values, emphasizing resource exploitation.

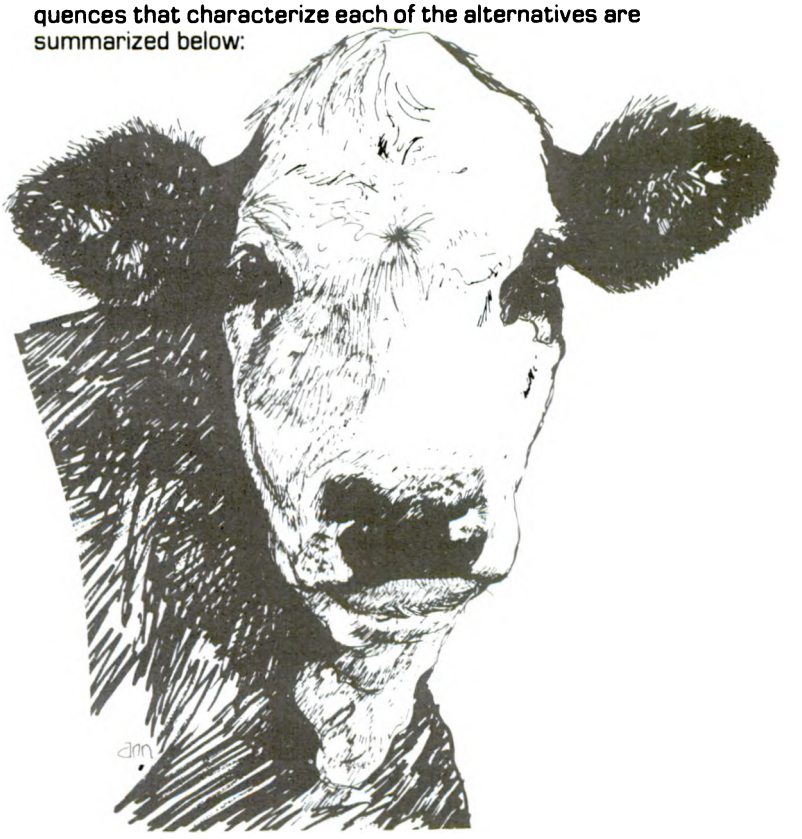
4. High Level Management Alternative. This alternative would result in more restrictions on development, and provide a greater degree of environmental protection.

Chapter 3 is a description of the physical setting of the Billings Resource Area and those resources present which could be affected by decisions made in this land use plan.

Chapter 4 includes a section on the assumptions used by BLM resource specialists in assessing environmental impacts potentially resulting from implementing each of these alternatives. A General Impact section provides a discussion of impacts, which, for the most part, are common to all alternatives. These impacts may vary in magnitude and type from one alternative to another depending upon the level of action proposed. The general impacts from proposed actions are quantified and assessed on a cumulative impact basis for each alternative plan in Chapter 4. This segment also includes a discussion of impacts which are specific to the alternative proposals but not included in the General Impact section.

Chapter 5 summarizes the public involvement process and gives a listing of the agencies, organizations and individuals consulted during the planning process. This chapter also contains copies of the transcripts from the Lovell, Wyoming, and Billings, Montana public hearings, and letters received during the 90 day comment period from Federal, state and local government agencies, as well as environmental groups, industry and individuals. The BLM's response to these comments is also provided.

The recommended action and environmental consequences that characterize each of the alternatives are summarized below:



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ENVIRONMENTAL CONSEQUENCES

RESOURCE ISSUE	PROPOSED PLAN	CONTINUATION OF EXISTING MANAGEMENT ALTERNATIVE	LOW LEVEL ALTERNATIVE	HIGH LEVEL ALTERNATIVE
1. Grazing Management	Increase AUMs by 10,711 in long term. Total of 152 structural range improvements. Mechanical treatment on 6,818 acres, burn 21,520 acres, spray 45 acres of leafy spurge.	Increase AUMs by 3,120 in long term. Total of 66 structural range improvements. Spray 45 acres of leafy spurge.	Reduce AUMs by 2,221 from total of 62,037 AUMs.	Same as proposed level.
2. Wild Horse Management	Maintain wild horse population at 121 head. Potential for 179 head in 25 years or longer. Build 7 miles of fence, install 5 new water catchments, improvements to 8 horse traps, proposed acquisition of 2,240 acres of non-public lands.	Same as proposed plan with exception of non-public land acquisition.	Wild horse population at 130 head initially, natural rise and fall in populations long term. Build 5 miles of fence, install 10 water catchments.	Maintain wild horse population at 121 head, potential for 179 head in 25 years or longer. Build 15-19 miles of fence, install 7-8 water catchments, improve 8 horse traps, proposed acquisition of 2,240 acres of non-public lands.
3. Wildlife Management	Monitor 60,000 acres of terrestrial habitat, 12 waterfowl reservoirs, 300 acres of prairie dog towns, 10 miles of streams and 3 reservoirs. Develop 1 habitat management plan for chukar partridge, install 5 watering devices, develop 50 waterfowl nesting islands, fence 7 reservoirs, install 20 raptor nesting platforms, develop 3 fishing reservoirs, range management practices to improve wildlife habitat to 41 miles of woody floodplain in I category allotments, plant 25 acres of dense nesting cover.	Monitor 50,000 acres of terrestrial habitat, 7 waterfowl reservoirs, 300 acres of prairie dog towns, 5 miles of streams and 2 reservoirs. Install 12 watering devices, 20 waterfowl nesting islands, fence 7 reservoirs, fence 10 acres of riparian habitat.	Monitor 40,000 acres of terrestrial habitat.	Monitor 10,000 acres of terrestrial habitat, 12 waterfowl reservoirs, 300 acres of prairie dog towns, 10 miles of streams and 3 potential fisheries reservoirs. Develop HMPs for chukar partridge, waterfowl, fisheries. Install 20 watering devices, develop 50 waterfowl islands, fence 7 reservoirs, install 20 raptor nesting platforms and develop 3 fisheries reservoirs. Range management practices to improve wildlife habitat to 41 miles of woody floodplain in I category allotments, plant 25 acres of dense nesting cover.
4. Timber Management	Cut 70 thousand board feet annually. Designate 9,500 forested acres as protected areas.	Cut 45 thousand board feet annually. Designate 14,457 acres as protected areas.	Cut 90 thousand board feet annually. Designate 217 acres as protected areas.	Cut 45 thousand board feet annually. Designate 15,607 acres as protected areas.
5. Coal	Carry forward 9,360 acres (20:1 stripping ratio), 114 million tons, pending further study for possible surface mining, but recommend to the RCT that a 10:1 stripping ratio be utilized reducing this acreage figure to 4,704 acres. Apply wildlife and cultural unsuitability criteria in FY-84. No mining in short term (8 years), 1992 construction start, 1994 mining start. 150,000 tons mined first year, 300,000 tons thereafter. All coal carried forward suitable for underground mining pending further study. Continue two existing mines in Bull Mountains through emergency leasing.	Maintain current production of 10,000 tons per year for two existing mines in Bull Mountains.	All 9,360 acres would be available for surface mining--no further constraints. 4,350,000 tons would be mined in long term (25 years). No mining in short term, 1992 construction start, 1994 mining start. 150,000 tons mined first year, 300,000 tons annually thereafter.	Some tonnage as proposed action. Would be less acreage based on further application of multiple resource constraints. Mining at a 20:1 stripping ratio.
6. Oil and Gas Leasing	No acreage specified for no lease category lands. Possibility of withholding wild horse range, sensitive cultural and wildlife areas. 70,000 acres to be leased with special stipulations. 579,443 acres with standard stipulations.	No acreage in no lease category. 49,870 acres in special stipulation areas. 599,573 acres in standard stipulation areas.	649,443 acres leased with standard stipulations.	Same as proposed plan.

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RESOURCE ISSUE	PROPOSED PLAN	CONTINUATION OF EXISTING MANAGEMENT ALTERNATIVE	LOW LEVEL ALTERNATIVE	HIGH LEVEL ALTERNATIVE
7. Land Tenure Adjustment	Total of 6,499 acres available for exchange or disposal by any legal means in the land tenure adjustment area. This includes 3,517 acres from original disposal category (a reduction of 1,720 acres) and 2,982 acres in original exchange category. Retention--27,275 acres and 2,382 acres in further study. Remainder of Billings Resource Area zoned. 364,350 acres - retention; 52,500 acres - disposal. Disposal zones represent less than 10% of total acreage. Emphasis on exchange for all disposal lands.	Continue program of sales and exchanges which averages approximately 1,142 acres short term, 3,570 acres long term. Based on last 10 years average.	No land tenure program. Retain all 36,156 acres in land tenure adjustment area.	Same as proposed plan.
8. C&MU Classifications	980 acres segregated from mineral entry in Pryor Mountains where developments occur on wild horse range.	28,586 acres segregated from mineral entry.	No acreage segregated.	Same as Continuation of Existing Management Alternative.
9. Recreation Access	Acquire access into 7 areas.	No proposal to acquire additional access.	No proposal to acquire additional access.	Acquire access into 10 areas.
10. Off-Road Vehicle Use	Restrict ORV use on 57,830 acres including Pryor Mountains, environmental education sites, Asparagus Point and 70 acres in the South Hills. Possible future closures of public lands adjacent to Shepherd Environmental Education Area. Open five roads totalling 9 miles on west side of Pryor Mountains. Close one road totalling 3 miles which penetrates Pryor Mountain WSA.	Restrict ORV use on 55,800 acres. 70 acres in South Hills formally closed.	Restrict ORV use on 55,800 acres. 70 acres in South Hills formally closed. 13 miles of formerly closed roads to be opened.	Restrict ORV use in 139,800 acres. 70 acres in South Hills closed, close 2 miles of additional roads.
11. Environmental Education	Maintain 77 acre Shepherd Ah-Nei Area, open the 56 acre Acton Area if visitation exceeds 6,000 visitors/year at Shepherd.	Maintain 77 acre Shepherd Ah-Nei Area for environmental education purposes.	No environmental education areas specifically identified.	Designate both the Acton and Shepherd sites as environmental education areas. Total of 133 acres.
12. Wild Horse Interpretation	No interpretive center proposed. Possible interpretive development somewhere on wild horse range in the future. Work with National Park Service and Forest Service for interpretive signing, interpretive presentation at Park Service Lovell Visitor Center. Six boundary or roadway signs on BLM lands.	Maintain three existing roadway signs.	Maintain three existing roadway signs.	Develop Winddrinker Overlook Interpretive Site. Place three more roadway signs, develop 1 mile of road.
13. Wilderness	Recommend suitable: 1. Pryor Mtn. - 16,927 acres 2. Burnt Timber Canyon - 3,430 acres 3. Big Horn Tack-On - 2,550 acres Recommend non-suitable: 1. Twin Coulee - 6,870 acres 2. Burnt Timber Canyon - 525 acres 3. Big Horn Tack-On - 2,000 acres	All WSAs (32,302 acres) recommended non-suitable. Continue present resource usages.	All WSAs (32,302 acres) recommended non-suitable. Multiple use management recommended.	All WSAs (32,302 acres) recommended suitable for wilderness preservation.

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Proposed Land Use Plan

Improvements in ecological range conditions would be the same as those described in the High Level Management Alternative.

The current ecological range conditions on that portion of the Pryor Mountain Wild Horse Range (PMWHR) in Montana would remain static with a slight upward trend in the long term. Range conditions in the Wyoming portion of the PMWHR would remain static. Management cost would increase slightly.

Land tenure adjustment could result in a reduction of 49,809 acres. This would be insignificant in relation to the total amount of public land in the resource area. With land exchange being the predominant method of disposal, less public land acreage would be lost, while land with more desirable public values would be acquired through exchange or exchange pooling.

Surface disturbances, from all actions, could result in a loss of 3,483 acres of native vegetation. However, mitigating practices such as reseeding, rehabilitation and increased forage produced as a result of grazing management practices could reduce this loss to an insignificant amount.

Spraying with Tordon would decrease leafy spurge on 100 acres in the short term.

The amount of timber harvested would be 560 thousand board feet in the short term and 1.19 million board feet (MMBF) in the long term. Areas protected from commercial timber harvest would decrease by 34%, to 9,500 acres.

Wildlife habitat would improve moderately in the short term and significantly in the long term, primarily because of increased vegetation production due to grazing management practices. Additional livestock watering sources would expand wildlife habitat significantly on the improve ("I") category allotments. There would be a moderate decrease in chukar partridge and sage grouse habitat due to the burning of 21,520 acres of sagebrush. However, this would result in a moderate increase in sharptail grouse habitat. Chukar partridge habitat would expand by 1,600 acres due to five additional wildlife watering sources. The development of 19 reservoirs and 50 nesting islands, fencing 7 existing reservoirs and planting 25 acres of dense nesting cover would significantly expand waterfowl habitat. This would increase the duck population by an estimated 350 ducks annually. Nesting cover for upland game birds would increase on 57,900 acres due to decreased off-road vehicle use. Ecological range condition on 80% of 41 miles of woody floodplain zone would improve or be maintained at good and excellent condition.

Nine thousand three hundred and sixty (9,360) acres would be considered as acceptable for further consideration for coal surface mining pending further study in the Bull Mountain Coal Field. This decision also eliminates from further consideration for leasing (Federal coal which is potentially surface mineable) the following acreages in the Bull Mountains:

10,920 acres because of surface owner opposition
2,480 acres because lands are subdivided
418 acres because of the application of unsuitability criteria

It should be noted that this plan decision seeks to encourage underground mining at the expense of other mining methods in the Bull Mountains. Large scale surface mining of Federal coal in the Bull Mountains would be discouraged in later activity planning. It would be recommended later to the Regional Coal Team during the Coal Activity Planning Process that a 10:1 stripping ratio of high potential coal be utilized in delineating tracts, reducing this acreage figure to 4,704 acres. Additional multiple use constraints may further reduce the area acceptable. Coal reserves within the 80 acre Federal lease in the Bull Mountains would be depleted in 4 years and would total approximately 40,000 tons. Emergency leasing would continue current production of the existing mine in the short and long term. The anticipated additional surface mining in the Bull Mountains would deplete reserves by 4,350,000 tons in the long term. This represents approximately 3% of the total coal reserves in the area and is considered insignificant. One or more underground mines could also be developed in the Bull Mountains. No prediction of the reserve with potential for removal is available. A potential underground mine in the Joliet/Fromberg area would deplete reserves by 630,000 tons in the short term and 2,550,000 tons in the long term. This scenario is discussed for analysis purposes only in the Joliet/Fromberg area. Total coal reserve figures for this field are unavailable at this time.

Oil and gas would be leased with standard stipulations on 579,443 acres and special stipulations on approximately 70,000 acres. Approximately 980 acres would remain segregated against locatable mineral entry.

Watershed conditions would improve significantly due to intensive grazing management and improved ecological range conditions. Water quality would decrease in the short term due to waterfowl nesting island construction. In the long term, water quality would increase due to decreases in sediment yield.

Hunting opportunities would increase significantly because of wildlife habitat improvement and expansion plus additional access to public lands. Fishing and floating opportunities would increase significantly due to increased access to rivers and the development of three additional fishing reservoirs. Physical restriction to cross-country access would increase moderately due to additional fencing and land treatments.

Restrictions on off-road vehicle (ORV) use on 57,830 acres would be a 4% increase from the current level. Seventy-seven acres would remain available for environmental education with an additional 56 acres available if visitors at the original site exceed 6,000 people annually. Environmental education sites would not be made available if major vandalism becomes a problem. Wild horse interpretation would remain at existing levels with the exception of a possible interpretive panel located along the Bad Pass Highway and several roadside signs. An interpretation site could be developed in the future.

Surface disturbing activities could affect 182 cultural sites. This would be insignificant due to mitigating practices.

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Long-term minor impacts to visual resources would occur under this alternative.

Wilderness values would be preserved on 22,907 acres. In the long term, multiple use proposals could be permitted on the 9,395 acres not recommended for wilderness designation. These actions would be insignificant in terms of wilderness opportunities available in the region.

Permit values and animal unit month (AUM) changes would be the same as those described in the High Level Management Alternative. Social and economic impacts resulting from coal development are also the same as those described in the High Level Management Alternative.

Range improvement costs would total $995,725. Noxious weed control would result in a $3,000 annual cost.

Wild horse range improvements would cost $56,500. In the short term, approximately $21,000 would be incurred annually in order to excess approximately 30 wild horses.

Improvements for the benefit of wildlife would total $75,500.

Continuation of Existing Management Alternative

The ecological range conditions in the "I" category allotments would improve moderately in the long term; primarily from prescribed grazing treatments, range improvements and better livestock distribution. No vegetative manipulation or mechanical treatments other than the annual spraying of 45 acres of leafy spurge within a 100 acre area would be utilized under this alternative. The acreages in excellent and good range condition would increase by 84% and 58% respectively, and the range in poor and fair condition would decrease by 78% and 44% respectively. These changes would occur in the long term and would be moderately significant. Ecological range conditions would remain static in the maintain ("M") and custodial ("C") category allotments. Vegetation allocations to livestock may increase by 4% in the short term and 5% in the long term.

Under present management, ecological range conditions in the Pryor Mountain Wild Horse Range would remain static with a slight upward trend in the long term. Range conditions on that portion of the PMWHR in Wyoming, would remain static. Management costs would increase slightly.

Land tenure adjustment could result in a decrease of 1,142 acres currently under Federal management in the short term and 3,570 acres in the long term. However, these acres may be used for land exchange pooling, and may not represent a loss in terms of management by a Federal entity. Overall, the impact on management would be insignificant.

Surface disturbances, from all actions, could result in a loss of 1,076 acres of native vegetation. However, mitigating practices such as reseeding, rehabilitation and increased forage produced from grazing management practices could reduce the vegetative loss under this alternative. Therefore, this loss would be insignificant.

Spraying with Tordon would decrease leafy spurge on 100 acres in the short term (45 acres of this total would be sprayed yearly).

The amount of timber harvested would be 360 thousand board feet in the short term and 765 thousand board feet in the long term. The area protected from commercial timber harvest would remain the same, at 14,457 acres.

Wildlife habitat for big game, upland game birds and nongame species would improve slightly in the short term and moderately in the long term, primarily because of increased vegetation production due to grazing management practices. Additional livestock watering sources would expand wildlife habitat slightly on the "I" category allotments. Chukar partridge habitat may expand by 3,800 acres due to 12 additional wildlife watering sources. The development of 4 reservoirs and 20 nesting islands and fencing 7 existing reservoirs would significantly expand waterfowl habitat and increase the duck population by an estimated 140 ducks annually. The nesting potential for upland game birds would increase on 55,870 acres due to decreased off-road vehicle use.

Coal reserves within the 80 acre Federal lease in the Bull Mountains would be depleted in 4 years. Approximately 40,000 tons of coal would be removed from this lease during that time period, an insignificant decrease of the Federal coal resource. Emergency leasing only would be allowed to maintain this rate of production.

Oil and gas would be leased with standard stipulations on 599,573 acres, and with special stipulations on 49,870 acres. Currently, there are 28,586 acres in the PMWHR segregated against mineral entry and this segregation would remain the same. The PMWHR may be leased for oil and gas with no surface occupancy under existing management.

Watershed conditions would improve moderately, with the exception of 28,585 acres in need of vegetative manipulation. Runoff potential in these areas would remain moderate to severe in the short term. Water quality would increase primarily due to decreases in sediment yield.

Hunting opportunities would increase slightly because of wildlife habitat improvement and expansion. Fishing and floating opportunities would remain the same. Physical restrictions to cross-country access would increase slightly due to new fencing.

Restrictions on off-road vehicle use on 55,870 acres would remain the same. Seventy-seven acres would remain available for environmental education. Wild horse interpretation would remain static.

Surface disturbing activities or projects could affect 24 cultural sites in this alternative. However, with proper mitigation, impacts would be insignificant.

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Long-term, minor impacts to visual resources would occur under this alternative but are considered insignificant.

There are 32,302 acres currently under wilderness study. There is a long-term potential for the loss of wilderness values without legislative protection in the Twin Coulee WSA. This is primarily due to the commercial timber present. It is not expected that the management of the three Pryor Mountain areas, Burnt Timber Canyon, Pryor Mountain and Big Horn Tack-On would change greatly with or without wilderness designation. These areas are currently managed as part of the Pryor Mountain Wild Horse Range. The present management of the horse range is compatible with the preservation of wilderness values. Mineral potential is considered low in these areas but if development did occur, under a no wilderness alternative, some wilderness values would be lost. Losses of wilderness values in the four study areas and units would be insignificant in relation to wilderness resources now protected in the region.

In the long term, 28 ranches would show increases in income due to a 19% increase in BLM AUMs. The net annual income would increase by $187 on small operations and by $1,203 on very large operations. Grazing permit values would increase by $3,600 for small operations, $9,300 for medium size operations, $12,500 for large operations and by $18,800 for the very large operations. These economic factors would be significant to some local operators but insignificant on a regional basis.

Structural range improvements would cost $314,000. Weed control would cost $3,000 annually and structural improvements on the Pryor Mountain Wild Horse Range would total $56,500. The wild horse excessing program would continue to cost approximately $21,000 annually. Structural improvements for the benefit of wildlife management would total $42,100.

Low Level Management Alternative

Improvement of the ecological range conditions in the "I" category allotments would be minimal, since the only management direction considered would be adjustments in the amount or seasonal use of livestock grazing. The acreage of range in good condition would increase by 10% and the range in fair condition would decrease by 9%. These changes would occur during the long term and are insignificant. Ecological range conditions would remain static in the "M" and "C" category allotments. Vegetation allocations to livestock would decrease by an insignificant amount (2% in the short term and 0.6% in the long term).

The acreage of range in poor condition on that portion of the PMWHR in Montana could increase as much as 293% and range in fair and good condition could decrease by 100% in the long term. Range conditions on the Wyoming portion of the PMWHR would deteriorate. Inbreeding, disease, harsh winters and poor range conditions could reduce wild horse populations far below present levels. These changes are highly significant.

Surface disturbances, from all actions, could result in a loss of 1,875 acres of native vegetation. However, mitigating practices such as reseeding and rehabilitation could reduce this figure significantly.

The amount of timber harvested would be 720 thousand board feet in the short term and 1.53 MMBF in the long term. The area protected from commercial timber harvest would decrease significantly (98%), leaving 217 acres in a protection category.

Wildlife habitat for big game, upland game birds, waterfowl and nongame species would remain static or may show a very slight improvement, primarily due to increased vegetation production on the "I" category allotments. Wildlife habitat, within the PMWHR, would be drastically reduced as horse populations increase and range conditions deteriorate. Nesting cover for upland game birds would increase slightly on 55,870 acres due to decreased off-road vehicle use. Harassment and relocation of wildlife species would increase sharply, primarily due to increased surface disturbing activities such as mining and logging. Aquatic habitat (streambank vegetation) would deteriorate slightly since no new range improvements would be constructed. Impacts to wildlife resources are considered insignificant, except within the PMWHR where wildlife habitat would decline significantly.

In this alternative, 9,360 acres would be considered as acceptable for further consideration for leasing pending further study. Coal reserves within the 80 acre Federal lease in the Bull Mountains would be depleted in 4 years and would total approximately 40,000 tons removed during this time period. The potential additional surface mining in the Bull Mountains would deplete reserves by 4,350,000 tons in the long term. This represents approximately 3% of the total coal reserves in that field and is considered insignificant. One or more underground mines could also be developed in the Bull Mountains, however, no prediction of reserves to be removed was available. Potential additional underground mining in the Joliet/Fromberg area would deplete coal reserves by 630,000 tons in the short term and 2,550,000 tons in the long term. This potential scenario is discussed for analysis purposes only in the Joliet/Fromberg area. Total coal reserve figures for this mine are not available.

Oil and gas would be leased with standard stipulations on 649,443 acres. No acreage would be segregated from locatable mineral entry.

Watershed conditions in the PMWHR would deteriorate moderately due to a deterioration in range conditions. Water quality would decrease primarily due to increases in the area wide sediment yield.

No significant increases in hunting or fishing opportunities would occur, primarily due to a lack of wildlife habitat improvement or expansion.

Restrictions on ORV use on 55,870 acres would remain the same with the exception of reopening 13 miles of roads. No areas would be available for environmental education. Wild horse interpretation opportunities would remain the same.

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Surface disturbing activities could potentially affect 30 cultural sites. These sites would be mitigated and impacts would be insignificant.

Surface disturbances from timber cutting, mineral exploration and changes in wild horse management practices would impair visual resources significantly.

A no wilderness recommendation could result in a potential loss of wilderness values on 32,302 acres. As is described in the Continuation of Existing Management Alternative, this would be insignificant in terms of wilderness opportunities in the region.

Twenty-eight ranches would have a significant decrease in income due to a loss of 20% of their AUMs with the implementation of this alternative. The average reduction in net annual income would range from $551 on small operations to $3,408 on very large operations.

By the end of the short-term period (8 years) the available forage would increase to within 11% of the original allocations. The same 28 ranches would still be impacted with losses ranging from $305 on small operations to $1,886 on very large operations.

After 25 years, the 28 ranches would lose about 3% of their original allocations. These reductions would range from $87 on small operations to $519 on the very large operations.

Initial grazing permit value losses would range from $3,800 on the small ranches to $19,700 on the very large ranches. After 25 years, annual losses would decrease to $600 on the small operations and $3,000 on the very large operations.

No additional operational expenses would be incurred under this alternative since no new project developments for grazing, wildlife or wild horses would be implemented.

High Level Management Alternative

Ecological range condition in the "I" category allotments would improve significantly in the long term; primarily from prescribed grazing treatments, range improvements, better livestock distribution, sagebrush burning, interseeding, disking and chiseling. The acreages in excellent and good range condition would increase by 84% and 88% respectively and range in fair and poor condition would decrease by 71% and 78% respectively. In the "M" and "C" category allotments, the acreage of range in good condition would increase by 4% and range in fair and poor condition would decrease by 6%. These increases would be due primarily to burning sagebrush on 7,400 acres in these allotments. Vegetation allocations to livestock would increase by 17% over the long term.

The acreage in good condition in that portion of the PMWHR in Montana would increase significantly by 368% and range in fair condition would decrease by 448% in the long term. The range in poor condition would remain static in the long term. Range conditions in the Wyoming portion of the PMWHR would also remain static. The long-term carrying capacity of the PMWHR would increase significantly (48%), from 121 head of horses to an estimated 179 head. Development of an interpretation site could potentially increase wild horse harassment.

Land tenure adjustment could result in a reduction of 49,809 acres currently under Federal management. This would be insignificant in terms of the total public land acreage in the resource area. With land exchange being the predominant method of disposal, less public land acreage would be lost, while land with more desirable public values would be acquired through exchange.

Surface disturbances, from all actions, could result in a loss of 3,242 acres of native vegetation. However, mitigating practices such as reseeding and rehabilitation could reduce this figure significantly. This loss would also be offset by the increased forage produced resulting from grazing management practices.

Spraying with Tordon would decrease leafy spurge on 100 acres in the short term.

The amount of timber harvested would be 360 thousand board feet in the short term and 765 thousand board feet in the long term. The area protected from commercial timber harvest would increase by 8%, to 15,607 acres.

Wildlife habitat would improve moderately in the short term and significantly in the long term, primarily because of increased vegetation production due to grazing management practices. Additional livestock watering sources would expand wildlife habitat significantly on the "I" category allotments. There would be a moderate decrease in chukar partridge and sage grouse habitat due to the burning of 21,520 acres of sagebrush. However, this would result in a moderate increase in sharptail grouse habitat. Chukar partridge habitat would expand by 6,400 acres as a result of 20 additional wildlife watering sources. The development of 19 reservoirs and 50 nesting islands, fencing 7 existing reservoirs, and the planting of 25 acres of dense nesting cover would significantly expand waterfowl habitat. This would increase the duck population by an estimated 350 ducks annually. Nesting cover for upland game birds would increase on 139,870 acres due to decreased off-road vehicle use.

Ecological range conditions on 80% of 41 miles of woody floodplain zone would improve or be maintained at good and excellent condition.

All Federal coal in the resource area which would be mined by underground methods is available for further consideration for leasing or exchange, pending further study. In addition, 9,360 acres of potentially surface mineable Federal coal reserves in the Bull Mountains are available for further consideration for leasing or exchange, pending further study. This decision also eliminates from further consideration for leasing (Federal coal which is potentially surface mineable) the following acreages in the Bull Mountains:

10,920 acres because of surface owner opposition
2,480 acres because lands are subdivided
418 acres because of the application of unsuitability criteria

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Coal reserves within the 80 acre Federal lease in the Bull Mountains would be depleted in 4 years and would total approximately 40,000 tons. However, emergency leasing would continue current production levels in the short and long term of this mine. The potential additional surface mining in the Bull Mountains would deplete reserves by 4,350,000 tons in the long term. This represents approximately 3% of the total coal reserves in the area and is considered insignificant. One or more underground mines could also be developed in the Bull Mountains. No prediction of the reserve available for removal was available. A potential underground mine in the Joliet/Fromberg area would deplete reserves by 630,000 tons in the short term and 2,550,000 tons in the long term. This scenario is discussed for analysis purposes only. Total coal reserve figures for this field are unavailable at this time.

Oil and gas would be leased with standard stipulations on 579,443 acres and with special stipulations on approximately 70,000 acres. There is also a strong probability that some areas would not be leased, but this acreage cannot be quantified at the present time. Approximately 28,586 acres in the PMWHR would be segregated against mineral entry.

Watershed conditions would improve significantly due to intensive grazing management and improved range conditions. In the long term, overall water quality would increase, primarily due to decreases in sediment yield.

Hunting opportunities would increase significantly because of wildlife habitat improvement and expansion as well as additional access to public lands. Fishing and floating opportunities would increase significantly due to increased access to rivers and the development of three additional fishing reservoirs.

Physical restrictions to cross-country travel would increase moderately due to additional fencing and land treatments. Restrictions on ORV use on 139,870 acres would result in a significant (150%) increase from the current level. Approximately 153 acres would be made available for environmental education. Wild horse interpretation would increase significantly by constructing the Winddrinker Overlook. The BLM has developed an activity plan which was approved in 1980 for the management of the Winddrinker Overlook site. This plan is on file in the Billings Resource Area Office.

Surface disturbing activities could affect 189 cultural sites. These impacts would be insignificant due to mitigating practices.

Long-term minor impacts to visual resources would occur under this alternative.

Wilderness values would be preserved on 32,302 acres. This would be insignificant in terms of the wilderness opportunities available in the region.

The overall short-term impact on ranch income in this alternative would be minimal. This is because the only identifiable change in AUMs would be the temporary disruption of grazing as mechanical treatments are applied or grazing systems implemented.

In the long term 43 ranches would show an increase in income due to a 38% increase in available AUMs. The average net annual income would increase by $380 on small operations and by $2,400 on very large operations.

With this alternative, permit values would increase by $7,300 for the small operations, $18,600 for the medium operations, $25,000 for the large operations and by $37,500 for the very large operations in the long term. This represents a 38% increase in permit value for each representative size category.

According to the economic and demographic model (ED Model), prepared by the BLM Montana State Office, population increases resulting from possible coal development are projected to be less than 1% for Yellowstone, Musselshell and Carbon Counties as well as the communities of Billings, Roundup and Fromberg. These small population increases would not significantly impact social well-being, social organization or community services.

Adjustments in the landownership pattern may mean a small loss or redistribution of Payment in Lieu of Taxes (PILT) payments to the counties. There would also be an increase in the local tax base. The magnitude of these changes would be insignificant. Such an adjustment in the landownership pattern would probably result in strong reaction from both those individuals and groups favoring and opposing the transfer of public lands.

Structural range improvements would cost $995,725 under this alternative. Noxious weed control would result in $3,000 annual costs. Wild horse range improvements would total $106,000 while improvements for the benefit of wildlife totals $102,500. Costs for a wild horse interpretive facility at the Winddrinker site would exceed $100,000.

The following is an abbreviated summary of these four alternatives.

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Summary of Major Changes From Draft RMP/EIS to Final RMP/EIS

The entire draft resource management plan/environmental impact statement (RMP/EIS) which was released to the public in April 1983, has been reprinted in this document with the incorporation of major changes resulting from public comment. This summary is provided in order to assist the reader in finding changes which are important in understanding the land use proposals for the Billings Resource Area. These changes are as follows:

An overlay has been prepared (inside map pocket, back cover) depicting land tenure disposal and retention zones for the entire resource area.

Maps of the Bull Mountain coal fields in Chapter 3 have been revised to more accurately portray the results of the application of the Federal coal planning screens and the affected acreage. A scenario using a 10:1 coal stripping ratio and summary of probable impacts has also been added to the proposed plan section as advice to the Regional Coal Team for further use in activity planning.

Eight areas sensitive to oil and gas leasing, where special stipulations may be applied have been added to the sensitive areas listing and mapped on the overlay which also contains the land tenure zones.

Maps of the South Hills and Shepherd Environmental Education area where off-road vehicle restrictions or closures are in effect have been added to the Proposed Plan section.

Extensive sections have been added to the grazing management, wildlife and coal discussions for clarification in response to public comments.

The southern portion of the Big Horn Tack-On wilderness study area consisting of 2,550 acres which was recommended nonsuitable for wilderness designation in the draft RMP/EIS is now included in the suitable recommendations for the wilderness study areas (WSAs) in the Pryor Mountains.

Acreage segregated from mineral entry has been increased from 50 to 980 acres.

The discussions on the PMWHR have been strengthened to emphasize that BLM's objective is to manage a healthy, viable wild horse herd.

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INTRODUCTION

Purpose and Need

The Billings Resource Area's Resource Management Plan/Environmental Impact Statement analyzes the resource, social and economic impacts of instituting a long-term resource management plan in the Billings Resource Area. This area is located in the southwestern portion of the Miles City District of the Bureau of Land Management (BLM) in Montana.

The Bureau's principal authority to manage public lands is found in the Taylor Grazing Act of 1934, the Federal Land Policy and Management Act of 1976 and the Public Rangelands Improvement Act of 1978. Through these authorities, BLM is responsible for managing resources on public lands in a manner that maintains or improves them.

This final environmental impact statement (FEIS) is written in compliance with the National Environmental Policy Act of 1969, the Council on Environmental Quality regulations and in specific response to litigation in the Natural Resources Defense Council et al. versus Rogers C.B. Morton et al. 1973 (U.S. District Court for the District of Columbia, ref. Case No. 1983-73).

The intent of this resource management plan/EIS is to anticipate and plan for the public needs from BLM lands in the Billings Resource Area to the year 2008.

The administration of public lands is complicated by lands of different ownership, uses and capabilities. The Billings Resource Area contains private lands as well as lands managed by the National Park Service, Bureau of Indian Affairs, Bureau of Reclamation, Corps of Engineers, the Montana Department of State Lands, the U.S. Forest Service and the Montana Department of Fish, Wildlife and Parks. Agency responsibilities are described in Appendix 1.1.

Unless otherwise specified, the recommendations made in this land use plan apply only to public lands administered by the Bureau of Land Management.

Setting

The Billings Resource Area, in southcentral Montana, is comprised of Wheatland, Golden Valley, Musselshell and Yellowstone Counties and portions of Big Horn, Carbon, Stillwater and Sweet Grass Counties. This area totals approximately 10 million acres of land of all ownerships (see Figure 1.1). The resource area administers approximately 425,336 public surface acres on a multiple use basis. There are 906,084 subsurface (mineral) acres within the resource area. The resource area is also responsible for the administration of 6,340 acres of public lands in the Pryor Mountain Wild Horse Range in Big Horn County, Wyoming.

Except for several contiguous blocks of land in Carbon County, most of the BLM managed lands in the Billings Resource Area are scattered tracts, intermingled with private and state-owned lands. Private lands are usually located along drainage bottoms and on the more productive uplands. In addition to livestock grazing, these public lands provide wildlife habitat, recreation, valuable minerals and other multiple resource values. This land pattern strongly affects management options.

The population of the area is primarily concentrated in the Yellowstone Valley in and around Billings, Montana.

The Planning Overview

In the late 1960's and early 1970's the BLM conducted several planning efforts on small sub-units of what is now the Billings Resource Area. These planning efforts resulted in several management framework plans (MFPs) that provided management direction for various resources and resource problems.

Because of new legislation, changing policies and new land use problems, there is a need to consolidate, revise and update the decisions made in the old MFPs. This new planning effort replaces earlier MFPs, includes portions of the resource area not covered in previous planning efforts and is called a resource management plan (RMP). An environmental assessment of the potential impacts associated with new land use proposals is the major portion of this planning effort. This environmental impact statement (EIS) assesses the impacts of several alternative land use plans developed to meet existing and anticipated public and private needs or resource demands.

The RMP process consists of nine action steps: (1) inventory and data collection, (2) identification of issues, (3) development of planning criteria, (4) management situation analysis, (5) alternative formulation, (6) assessment of alternatives, (7) selection of a preferred alternative, (8) selection of a resource management plan and (9) monitoring and evaluation.

The nine steps are described in more detail in Appendix 1.2. Due to limited time, data and manpower this RMP was streamlined to resolve only the major public issues and BLM management concerns.

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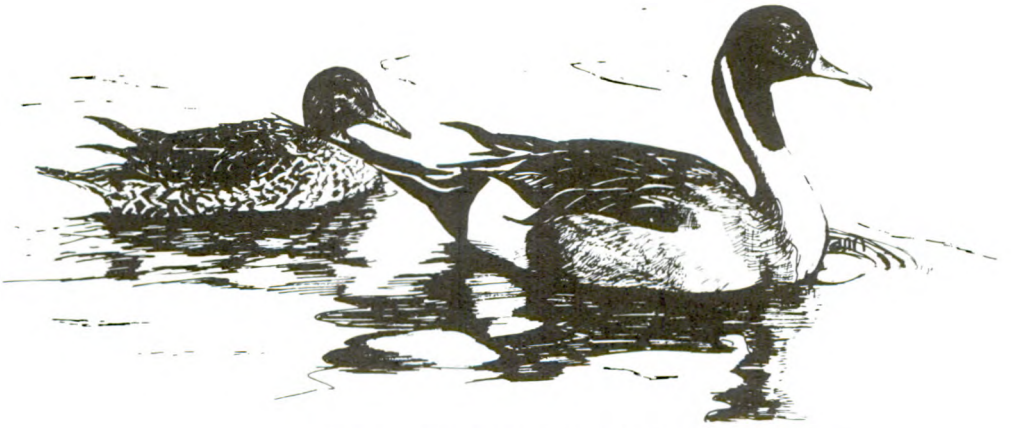

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ISSUES AND OTHER RESOURCE AREA RESPONSIBILITIES

ISSUE-DRIVEN PLANNING

The Bureau of Land Management (BLM) planning regulations generally equate land use planning with problem solving or with issue resolution. An issue may be defined as an opportunity, conflict or problem regarding the use or management of public lands and resources. Obviously not all issues can be resolved through land use planning, but may instead require changes in policy, budgets or legislation.

As a practical matter, issue-driven planning means that only those aspects of current management direction that are felt to be at issue are examined through the formulation and evaluation of alternatives. Alternatives are not developed for those aspects of current management direction that are felt to be satisfactory.

Responses obtained through public meetings and brochure mailings helped to identify 13 issues. These issues were examined to develop alternative means of resolution. The alternatives were then grouped into several management themes, or land use plan alternatives that provide different levels of management capability.

The direction to resolve issues in certain ways was provided by the District Manager based on existing policy, public desires and resource capabilities. In addition, planning criteria (standards and guidelines) were developed to guide the resolution of the issues (see Appendix 1.3).

ISSUES CONSIDERED BUT NOT ANALYZED AS PART OF LAND USE PLAN ALTERNATIVES

Several of the original issues and concerns identified by BLM specialists were not carried forward when further analysis revealed that they were not items of major concern, or sufficient data for analysis purposes simply does not exist. The following synopsis addresses these issues and describes ongoing management direction.

1. Corridor Planning

There is currently a state and Federal effort underway to identify utility and transportation corridors (see Utility-Transportation Corridor Study for Montana). There are numerous de facto corridors in the Billings Resource Area. These consist of major oil and gas pipelines (see Map in Oil and Gas Conservation Division Report); Interstate Highways 90 and 94; U.S. Highways 87, 310, 212, 191 and 12; State Highways 72, 3 and 78; and the Colstrip Power Transmission Lines. This resource management plan will apply corridor planning criteria according to State Director Policy. The corridor planning criteria appear to apply to the following areas:

Exclusion Areas (see Glossary)—The Twin Coulee and Pryor Mountain Wilderness Study Areas and the Burnt Timber and Big Horn Tack-On Wilderness Study Units would be exclusion areas if designated by Congress as wilderness.

Avoidance Areas (see Glossary)—The Petroglyph Canyon, Crooked Creek Natural Area, Asparagus Point, Bridger Fossil Area, Weatherman's Draw, Castle Butte, Steamboat Butte, Red Dome, Red Valley, Hoskins Basin Archeological District, Demi-John Flat Archeological District and the Bandit Site are important archeological or paleontological sites and scenic areas in the resource area. The Acton and Shepherd Environmental Education Sites are important to several school districts in the Billings area and receive heavy recreational use as well. The East and Red Pryor Mountains, Pryor Mountain Wild Horse Range, Bad Canyon Area, Beartooth Mountain Front (a 2 mile strip bordering the eastern boundary of Custer National Forest lands in the Beartooth Mountains) and public lands adjacent to the Clarks Fork, Stillwater, Yellowstone, Musselshell and Boulder Rivers are all important recreational areas because they provide hunting and fishing access and wild horse viewing, or contain significant visual resource values.

Windows (see Glossary)—Insufficient data prevented final identification of windows at this time.

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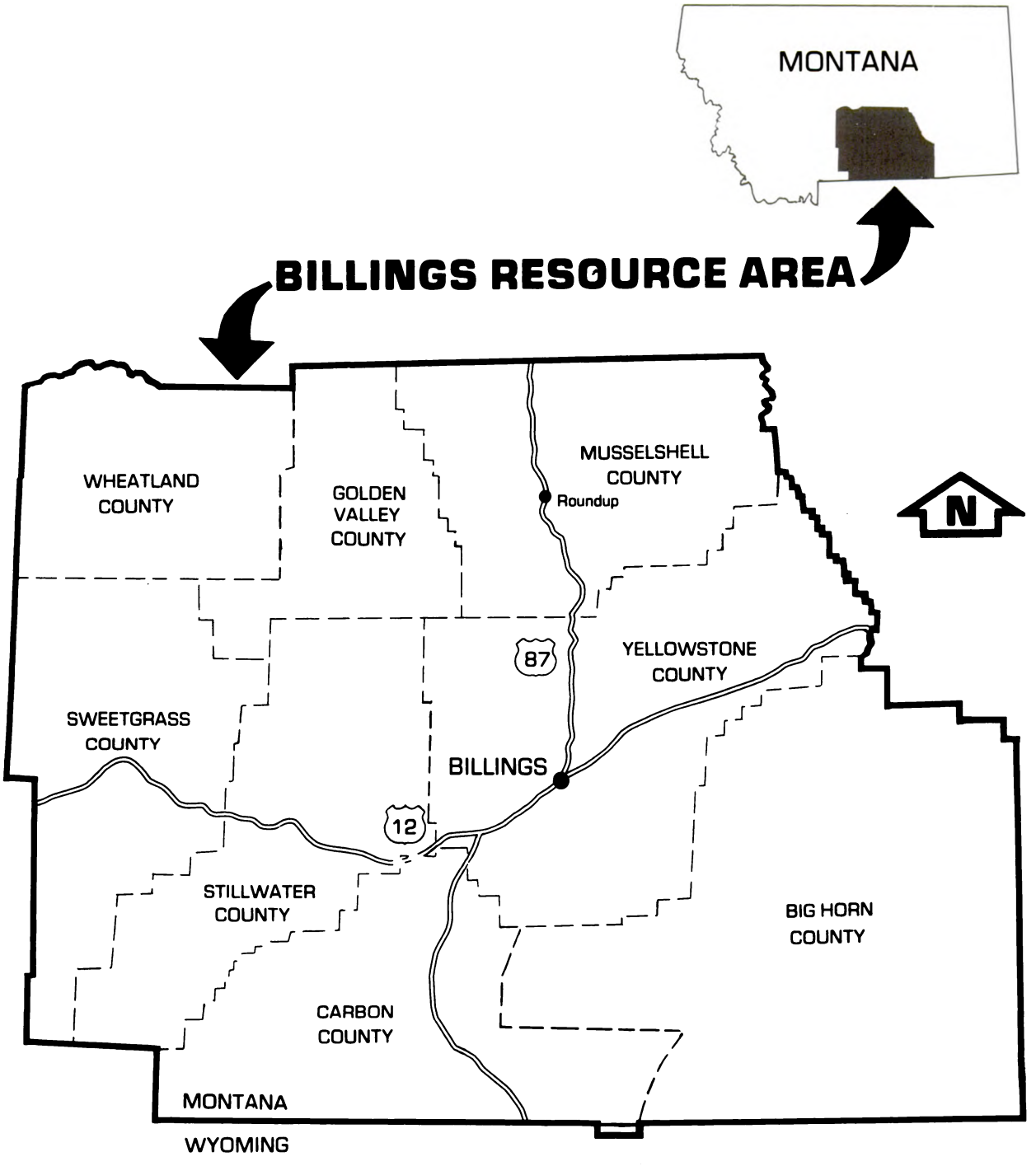
Figure 1.1. General Setting Map



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2. Unauthorized Agricultural Use

Unauthorized agricultural use, though not a significant problem in the resource area, will be addressed through permit, sale, lease or abatement based on case-by-case specifics.

3. Areas of Critical Environmental Concern (ACEC)

There are no identified ACECs in the resource area. If such areas are identified, and their resource values cannot be protected through other designations or management techniques, ACEC designation will be proposed.

4. Saleable Minerals

The resource area will attempt to meet the demand for these resources through sales, or free permits for home use, on a case-by-case basis, as in the past.

5. Locatable Minerals

Mineral exploration and development in the resource area will continue to be administered through the surface management regulations (43 CFR 3809).

6. Geophysical Exploration

Notices of intent for oil and gas exploration will be regulated in accordance with BLM policy.

7. Silvertip Creek Pollution

There is a pollution problem in the Silvertip Creek drainage from oil and gas operations in Wyoming. Lessee responsibilities need to be determined and, if necessary, a watershed activity plan developed, in coordination with other state and Federal agencies to resolve these pollution problems.

8. Public Land Parcels Not Leased Under Section 3 or Section 15 Grazing Lease Regulations

Several small tracts of land are topographically isolated, produce no forage (rock outcrops) or are surrounded by private land. These tracts are not grazed by livestock and will remain unallotted to livestock grazing.

9. Prairie Dog Control

Little data is available on the extent of the prairie dog population in the resource area. No requests for prairie dog control have been received and none are anticipated. If prairie dogs become a significant problem, the guidance contained in the State Director's Prairie Dog Policy Statement of April 1980, will be used to make a decision about controlling them.

10. No Grazing Management Alternative

In the Grazing Management issue, the no grazing alternative was considered and analyzed during the scoping phase of developing this resource management plan (RMP). This alternative was felt to be neither feasible or legally implementable and will not be further analyzed in this document, as the BLM is required by law to permit livestock use of public grazing lands. The scattered nature of the public land pattern in the Billings Resource Area and the cost of fencing public lands precludes implementing a no grazing alternative on an economically feasible basis. In addition, current range conditions do not warrant total removal of livestock, and in fact, such a policy degrades the ecological range condition. This does not preclude elimination of grazing by livestock on an individual allotment basis if range conditions warrant such eliminations or other uses warrant priority.

ISSUES CONSIDERED IN LAND USE PLAN ALTERNATIVES

A number of specific issues resulted from public comments at scoping meetings, brochure mailings and input from a number of groups and governmental organizations. Billings Resource Area employees also identified a number of issues. The following discussions present a brief overview of the issues included in the alternatives (Chapter 2) and analyzed in Chapter 4.

1. Grazing Management

In 1981, an inventory of soils and vegetation was completed to determine range condition and potential and to identify resource problems and conflicts (see Chapter 3, Vegetation). As a result of this inventory, plus public comments and professional knowledge of the rangeland resources of the resource area, the following grazing management issues and concerns were identified:

A. Proper stocking rates are concerns on two allotments;

B. Overall, 40% of the inventory area is in fair and poor condition and provides poor watershed cover, excessive runoff and low forage production for both livestock and wildlife;

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C. Accelerated erosion is associated with areas of poor and fair range condition. Soils in the 5-9 inch precipitation zone are particularly vulnerable to erosion due to sparse vegetative cover;

D. Substantial acreage is covered with dense sagebrush (25% or more canopy cover). Improvement in range condition will be very slow without some reduction in the sagebrush canopy;

E. Other areas are dominated by blue grama or fringed sagewort and their condition will improve very slowly without mechanical treatment;

F. Poor livestock distribution is evident on many allotments and results in heavy use of favored areas and little use elsewhere;

G. Noxious weeds, especially leafy spurge, are spreading on public lands in the resource area; and

H. Old stands of crested wheatgrass are unproductive and need rejuvenation through some type of mechanical treatment.

2. Wild Horse Management

In 1981, a comprehensive inventory was conducted on that portion of the Pryor Mountain Wild Horse Range (PMWHR) in Montana to determine the current vegetative condition and to project the future vegetative production in response to management actions. The 1971-1972 Ocular Reconnaissance Range Survey will be utilized for those portions of the PMWHR in Wyoming. The following issues or concerns were identified in this inventory:

A. The range condition on that portion of the PMWHR in Montana is less than satisfactory. The inventory indicated that 33% of the area was in fair range condition; 21% was in poor condition; and 7% was in good condition while 39% was unsuitable for grazing. Any improvement in range condition will be slow because of low site productivity, and would occur only after proper use of the vegetative resource. Those portions of the PMWHR in Wyoming are estimated to be in fair and poor condition. Range condition is a primary concern because of its obvious impact on the health and viability of the horse herd.

B. The number of wild horses to be maintained under current range conditions is a primary concern.

C. Existing management is not consistently maintaining wild horse numbers at a level compatible with other resource values. This is contributing to current and potential problems with watershed conditions, wildlife habitat and the management objectives of other agencies.

D. The BLM is concerned that all lands now available to the wild horses remain available.

E. The current cost of excessing wild horses exceeds $690 per horse. This cost must be reduced because past and anticipated budget allocations will not permit a continuous and timely excess program. This occasionally results in a population that exceeds the carrying capacity of the horse range (as discussed in item C).

Alternatives in this resource management plan (RMP) will discuss habitat conditions in relation to maintaining healthy wild horses and wildlife. This plan will provide management direction on wild horses through discussion of the following: where will wild horses be maintained; how many will be managed; generally, what type of animal will be maintained; what level of management intensity is appropriate; and what provisions for public access are needed?

A Wild Horse Herd Management Area Plan will be developed in conjunction with the National Park Service and U.S. Forest Service after this RMP is completed and will incorporate the management direction provided by this plan.

3. Wildlife Management

Public lands within the resource area provide all or significant portions of key habitats for a variety of wildlife species. These habitats have been quantified utilizing the most current BLM data and information obtained from cooperating state and Federal agencies and is presented in Chapter 3. Habitat areas have been mapped for key species and are available for review in the Billings Resource Area Office.

The discussion of impacts to these habitat areas resulting from other resource proposals (presented in Chapter 4) has been presented from the standpoint of a worst case analysis, presuming that no wildlife-oriented constraints are imposed. The rationale for this approach is: (1) no site-specific crucial habitats or significant conflict areas of concern were identified in the scoping or public input phases of the RMP process by the general public, special interest groups or cooperating wildlife agencies and (2) other resource proposals, for the most part, could not be focused to definite site-specific areas of disturbance.

Wildlife habitat management will be given equal status in all phases of multiple use resource management within the resource area. Other uses of the public lands such as energy development, livestock grazing, rangeland improvements and recreational activities can potentially have significant adverse impacts to the wildlife resource. As site-specific proposals for any type of development are provided, a closely coordinated multidisciplinary environmental assessment will be completed in each case, which will identify anticipated impacts to the wildlife resources and incorporate mitigating measures to reduce or eliminate these impacts. A list of standard stipulations and mitigative measures is presented in the Assumptions Section in Chapter 4 of this document.

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4. Timber Management

There is a demand for timber products from BLM forested areas, though this demand is relatively small. Some forested areas may need protection from development and harvest due to the presence of other sensitive resource values. This RMP identifies these areas and recommends a course of action to resolve these conflicts.

5. Coal

The resource area contains known deposits of coal where surface mining or underground mining could occur. Before Federal coal can be considered for leasing, a decision must be made in a land use plan determining how much of the coal is acceptable for further consideration for leasing. This process involves applying four planning steps.

A. Lands having potential for developing coal must be identified. Only coal of high or moderate development potential will be considered further.

B. The lands identified as having potential for development are then examined for their suitability for coal leasing. Surface owners over split estate Federal coal are consulted to determine their views for or against surface coal mining on their lands. The BLM will try not to lease coal for surface mining in instances where a qualified surface owner is opposed to leasing coal on his land. If a significant number of surface owners are opposed to coal leasing for surface mining, a portion or all of the coal field may be blocked out and not considered further for leasing for surface mining during the life of this RMP. Surface owner opposition to coal mining may not be applied to deposits which would be mined by underground methods. The Department of the Interior cannot issue a lease for surface mining of Federal coal, where the qualified surface owner refuses to consent to such mining (Section 714, Surface Mining Control and Reclamation Act).

C. The third planning step involves application of the 20 unsuitability criteria established by Federal regulations stemming from Section 522(a) of the Surface Mining Control and Reclamation Act of 1977 (SMCRA) and the Federal Coal Regulations at 43 CFR, Part 3400. In many cases, an individual criterion may not be fully applied due to lack of adequate information. The final result is a description of lands which may not be leased because a criterion (or criteria) applies, or that some lands will be considered available for further consideration for coal leasing pending collection of further environmental data. There is a general exemption stating that coal deposits to be mined by underground methods shall not be assessed unsuitable at the land use planning stage. Appendix 1.4 is a description of the coal unsuitability criteria.

D. The last planning step is the application of multiple use management concepts which may eliminate additional areas from further consideration for leasing to protect other locally important or unique values not included elsewhere in the unsuitability criteria.

Coal lands which pass through these planning steps are described as acceptable for further consideration for leasing, pending further study, in some cases.

At this point, the leasing process splits. Public lands which are included in designated coal production regions must go through a detailed activity planning phase.

In accordance with the Federal Coal Management Program, the activity planning phase is carried out under the direction of a Regional Coal Team (RCT). The RCT for the Powder River Region, which includes the Bull Mountains, is made up of the BLM State Directors of Montana and Wyoming, the Governors of Montana and Wyoming and a chairperson who is a representative of the BLM Director.

Areas found acceptable for further consideration for leasing in the land use plan are further analyzed by the RCT. This process includes a call to industry for expressions of interest, tract delineation, site-specific analysis, tract ranking, selection of alternatives for leasing, a regional environmental impact statement (EIS) assessing impacts and mitigation measures for the various alternatives, and finally selection and scheduling of final lease tracts to be offered for sale.

Once a tract is leased, the lessee must comply with existing state and Federal regulations governing mining and reclamation. These include: Office of Surface Mining Reclamation and Enforcement regulations (30 CFR 700-899); Environmental Protection Agency regulations (40 CFR 0-1399); Council for Environmental Quality regulations (40 CFR 211); the Department of the Interior's Coal Management Program regulations (43 CFR 23 and 3400) and regulations promulgated under the Montana Strip and Underground Mine Reclamation Act and the Montana Environmental Policy Act.

Before mining can begin, a permit to mine must be obtained from the Montana Department of State Lands (DSL) and the Federal Office of Surface Mining (OSM). An EIS must be prepared by these agencies on the proposed mine at the time of permit application to address the impacts of the action.

The rest of the resource area lies outside any designated coal production region and may be leased upon application. An environmental assessment of the proposed lease area is prepared prior to any sales. Once a tract is leased, the lessee must comply with the Federal and state regulations governing mining and reclamation as stated above.

Under either process, a no lease sale for purposes of surface coal mining may occur in a split estate situation unless the qualified surface owner provides written consent to surface mining operations.

6. Oil and Gas Leasing

There are several producing oil and gas fields in the resource area. The activities associated with oil and gas exploration and production may impact scenic values, wildlife habitat, cultural resources and other land uses. The resource area currently operates its oil and gas

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program as described in the Lewistown District Oil and Gas Programmatic Environmental Assessment (EA). All lands are currently considered leasable. Those lands designated as nonsensitive to oil and gas industry activities are leased directly from the Montana State Office with standard stipulations attached (see Appendix 1.5). These stipulations provide adequate protection for other environmental components.

When lease applications are received on lands designated as sensitive to industry activities, they are forwarded to the resource area for attachment of special protective stipulations. "No surface occupancy" may be a stipulation imposed on portions of a lease.

The largest block of unleased acreage in the resource area is the Pryor Mountain Wild Horse Range and its adjacent public lands, where until recently, industry interest has been low. This RMP will review the categories identified in the District Oil and Gas Programmatic EA to ensure that all potential adverse impacts have been considered and that full consideration is given to those areas that have significant potential for oil and gas exploration and development. Primary emphasis will be placed on the evaluation of oil and gas potential through exploration and development on the Pryor Mountain Wild Horse Range.

7. Land Tenure Adjustment

The isolated nature and small size of many parcels of public land in the resource area makes them difficult and uneconomic to manage. This particular land pattern is a result of two basic factors—scattered unappropriated public land and reacquired homesteads.

A. Scattered Unappropriated Public Land

Following the passage of the 1862 Homestead Act, vast portions of public land passed into private ownership. These lands were basically the more productive agricultural lands capable of sustaining a family farm. Some marginally or submarginally productive land was also homesteaded. The public lands that were left unappropriated were thus scattered in various sized parcels within large areas of privately-held lands.

B. Reacquired Homesteads

The "Dust Bowl" era of the 1920's and 1930's resulted in many submarginal dryland homesteads being abandoned. The Bankhead-Jones Farm Tenant Act of 1937 authorized Federal purchase of these privately-owned farmlands. The lands were then retired from agricultural production, seeded back to rangeland, and transferred to the jurisdiction of the General Land Office, which in 1946, along with the Grazing Service, became the BLM. These scattered lands, referred to as Land Utilization (LU) lands, are managed in the same manner as public land.

In order to address the above issue, the resource area developed retention and disposal criteria (see Appendix 1.3, Issue 7) to be applied to public lands within the Land Tenure Adjustment Area. The Land Tenure Adjustment Area was defined as an area of high public interest in a zone around Billings and along the Yellowstone and Stillwater Rivers. The initial inventory effort was focused in this area because of the lack of public access for recreation purposes along the rivers and because of the many scattered tracts near Billings.

Following development of the resource area's retention and disposal criteria, the BLM Montana State Office also published a list of retention and disposal criteria (see Appendix 1.6). These criteria are contained in the State Director Guidance for Resource Management Planning in Montana and the Dakotas (April, 1983). Any further use and application of land tenure adjustment criteria by the resource area will be from those contained in the State Director Guidance.

Individual tract maps and rationale for disposal and further study areas within the Land Tenure Adjustment Area are available for inspection at the BLM Billings Resource Area Office, 810 East Main, Billings, Montana.

If public lands are exchanged or sold, the mineral estate will, in most cases, be retained by the Federal Government, except where no minerals exist or where mineral exchanges are found to be in the public interest.

8. Classifications

Three classifications made under the Classification and Multiple Use Act (C&MU) of 1964 currently exist in the Pryor Mountain area and portions of the Pryor Mountain Wild Horse Range (see Figure 1.2). A Washington Office direction dated June 18, 1981 (see Appendix 1.7, OAD No. 81-11) instructs that all C&MU classifications be eliminated by the end of fiscal year 1983 (FY-83). This directive does allow vital portions of certain classifications to be retained, if they contain important or unique values (improvements, cultural resources, etc.).

Classifications were identified as an issue in this RMP in order to obtain public input in the review process. Any comments received on the draft RMP concerning classifications will be incorporated into a separate review process. Review of these classifications were completed by the end of FY-83.

These classifications segregated the lands from appropriation under the agricultural land laws, from sales under Section 2455 of the Revised Statutes and from operation of the mining laws, but not from mineral leasing. As long as the withdrawals remained in effect, exploration for and development of commercial deposits of locatable minerals could not be allowed.

The Federal Land Policy and Management Act of 1976 repealed some of the agricultural land laws and Section 2455 of the Revised Statutes. The only agricultural land laws remaining are the Desert Land Entry and the Carey Act (see Glossary).

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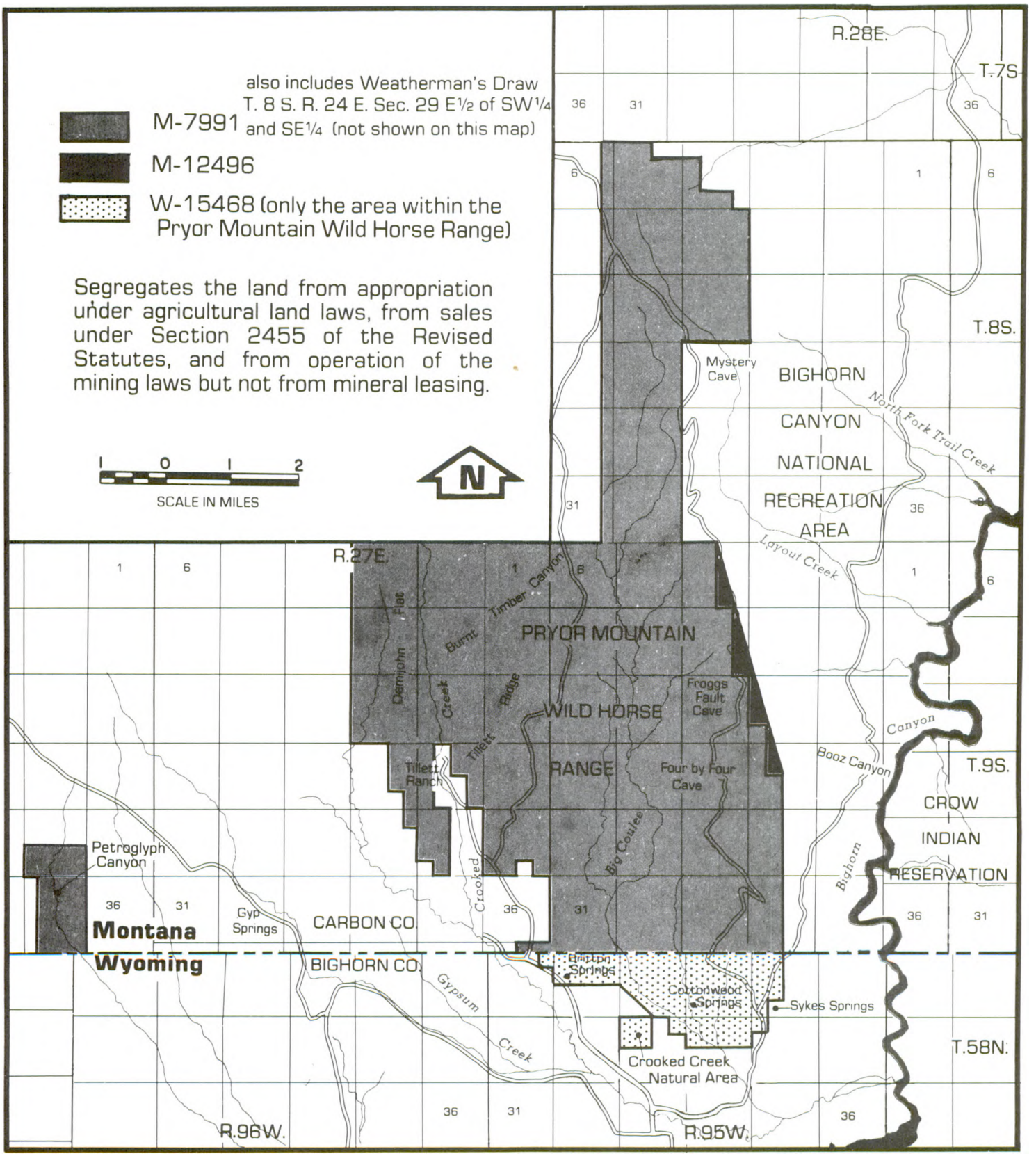
Figure 1.2. C&MU Classification



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9. Recreation Access

There appears to be a demand for additional physical and/or legal access to public land to accommodate recreational users. This RMP identifies public lands where it's desirable to pursue public access. Emphasis has been placed on a zone surrounding Billings; the Yellowstone River; and the Bridger, Belfry, Warren Triangle Area.

10. Off-Road Vehicle Use

There is a demand for off-road vehicle (ORV) use as an activity by itself, as well as in conjunction with other uses of public lands. This demand is expected to increase, particularly in the Billings area as the population continues to grow. However, ORV use can conflict with other resource uses by impacting wildlife habitats and causing increased soil erosion by destroying vegetation. This RMP recommends areas where ORV use will be restricted or eliminated. Attention will be focused on areas near Billings and the Pryor Mountains.

11. Environmental Education

There are currently two sites designated as environmental education areas, one northeast of Shepherd, Montana and another northeast of Acton, Montana. The use of these sites has been declining while other uses that can conflict with environmental education use are increasing. This RMP determines the future direction for these sites in keeping with both BLM's and the public schools' present budgetary and personnel constraints.

12. Wild Horse Interpretation

Winddrinker is a proposed observation/interpretive site in the Pryor Mountain Wild Horse Range. Guidelines for development have been outlined in a Winddrinker Activity Plan, approved in 1980, on file at the Billings Resource Area Office. This RMP will determine whether such a development (and what level of development) is desirable in light of the amount of public interest and the costs and benefits of the proposal.

13. Wilderness

This RMP analyzes two wilderness study areas (WSAs) and two wilderness study units (WSUs) and makes recommendations about their suitability for inclusion in the National Wilderness Preservation System (NWPS).

Terminology to distinguish areas of less than 5,000 acres undergoing wilderness study from areas of more than 5,000 acres is used in this document. The Burnt Timber Canyon and Big Horn Tack-On Wilderness Study Units are less than 5,000 acres in size. Both are adjacent to other Federal agency lands recommended for wilderness designation and contain wilderness values identified during the inventory phase of wilderness review. Washington Office permission has been obtained to study these units under authority provided in Section 202 of the Federal Land Policy and Management Act. However, it's not permissible to call these units wilderness study areas.

The remaining two areas, Pryor Mountain and Twin Coulee, are both over 5,000 acres and are WSAs. The Wilderness Study Policy requires that at least two alternatives be analyzed. The High Level Management Alternative recommends all the acreage in the four areas and units as suitable for wilderness designation, and the Low Level Management Alternative recommends none of the acreage as suitable. In addition, an alternative to continue existing management, and an alternative recommending only a portion of any individual area as suitable for wilderness, as well as the BLM Proposed Action for wilderness, were analyzed.

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WILDERNESS STUDY PROCESS

This resource management plan/environmental impact statement considers wilderness suitability for four areas and units and is in response to Sections 202, 302 and 603 of the Federal Land Policy and Management Act of October 21, 1976. This law directed the Bureau of Land Management to inventory, study and then report to Congress, through the Secretary of the Interior and the President, the public lands suitable for inclusion in the NWPS.

In November 1978, BLM began the wilderness review by preparing descriptions of those areas of 5,000 or more roadless acres of public lands and those units of less than 5,000 acres contiguous to other wilderness or wilderness study areas. These wilderness inventory areas and units were reviewed by the public, intensively inventoried by BLM and reviewed by BLM's Montana State Director in 1979-80. The State Director then released his final decision designating those areas having the minimum characteristics of size, naturalness and outstanding opportunity for solitude and/or primitive recreation (Final Decision: Montana Wilderness Inventory, November 1980) as wilderness study areas or units.

The BLM has set the end of fiscal year 1986 for completing its wilderness studies and reporting wilderness suitability to the Secretary of the Interior. This document completes the study requirements for 4 of the 47 wilderness study areas in Montana. The Federal Land Policy and Management Act requires the Secretary to report his recommendations to the President by October 21, 1991. The President has until October 21, 1993 to send his recommendations to Congress, as only Congress can designate any of the study areas or units as wilderness.

The study was conducted in accordance with BLM planning regulations (43 CFR 1610) which provides for the issuance of national policy and procedural guidance. The BLM Wilderness Study Policy (*Federal Register*, 47:23, February 3, 1982), serves this purpose and is available at the Billings Resource Area Office. The policy establishes procedures to ensure that wilderness suitability recommendations are: (1) based on full consideration of all multiple resource values of public lands, (2) consistent with established national policy and (3) that all interested and affected members of the public and state and local governments are made aware of the study and given adequate opportunity to comment and otherwise be involved in the study process.

Input on the wilderness recommendations made in this document was solicited during public hearings held in Lovell, Wyoming and Billings, Montana in May 1983. **It is important to note that a separate wilderness EIS and suitability reports will be prepared as a result of this RMP/EIS planning effort. These documents will be forwarded to Washington D.C. for review before the proposals contained in this plan are submitted to the Prosidont and Congress.**

BILLINGS RESOURCE AREA RESPONSIBILITIES COMMON TO ALL LAND USE PLAN ALTERNATIVES

This RMP emphasizes the major issues in the Billings Resource Area. As a result, a number of resource programs, uses and processes are not completely described in this document. Their continued implementation does not result in significant environmental impacts, and in most instances, because of limited management capabilities, no feasible alternative management possibilities exist. These programs will continue to be a part of the resource area's responsibilities and should be considered as part of each land use plan alternative analyzed in this document, unless designated otherwise. These program elements are as follows:

1. Range Programs

The vegetation production data displayed and used in this EIS were collected during the 1981 field season, using accepted BLM methods. These data were needed to help determine areas suitable for continued livestock grazing and to provide the basis for developing a rangeland management program and management alternatives. The vegetation production data have also been used to identify and analyze impacts and mitigation of the proposed action and alternatives. Those reviewing this EIS should recognize the limitations of vegetation inventory data. While these data are adequate for purposes of general planning and analysis, they must be supported and augmented by the results of monitoring studies before making forage allocation decisions.

Grazing Allotment Categorization

In order to address grazing management issues in accordance with BLM policy, grazing allotments were grouped into categories based on resource conditions, potentials, conflicts and economic and management considerations. The purpose of the categorization process, called selective management, was to prioritize allotments so management efforts and funding could be directed to the areas of greatest need. The three categories are: "I" Improve, "M" Maintain, and "C" Custodial. The category name refers to the management objectives. The objective for the "I" category is to improve unsatisfactory conditions; for the "M" category, to maintain satisfactory conditions; and for the "C" category, to manage in a custodial manner. Custodial management indicates low levels of monitoring or improvement.

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The primary criteria used in arriving at these categorizations were range condition, resource conflicts, economic feasibility to resolve conflicts and landownership pattern as it affects BLM manageability. Table 1.1 summarizes, by acreage, these allotment categories. This categorization is applied in all the alternatives described in Chapter 2 and analyzed in Chapter 4. Table 2.1 shows the management objectives or treatments for "I" allotments and methods to be used to achieve these objectives for each alternative. This table also shows the problems and conflicts in the "I" allotments.

TABLE 1.1: SUMMARY OF ALLOTMENT CATEGORIZATION

Category	Number	Acres	AUMs
Maintain	156	210,224	36,318
Improve	22	87,679	13,220
Custodial	215	101,485	12,899

Source: BLM, 1982

A summary of the allotments by category is contained in Appendix 1.8. The analysis in this document concentrates on BLM actions planned in the "I" category allotments. The BLM will continue to cooperate with ranchers, the Forest Service, the State of Montana and the Soil Conservation Service in improving grazing management on the "M" and "C" allotments containing small amounts of public land. If monitoring shows that an allotment in the "M" category is declining in condition or if conflicts arise, the allotment can be placed in the "I" category. Conversely, as "I" allotments improve, they may be placed in the "M" category.

Allotment Management Plans

The BLM intensive grazing management program is accomplished through allotment management plans (AMPs). These plans are prepared in consultation with livestock operators, state government and other interested parties. The level of grazing use, grazing systems, planned range improvements and monitoring efforts are described in each AMP. Table 1.2 summarizes the Montana State BLM policy concerning the level of monitoring by category. Allotment management plans are planned, or will be revised, for "I" category allotments and will be maintained for some "M" category allotments.

Allotment management plans will not be developed on "M" and "C" allotments that don't already have an AMP. Where a grazing management plan is developed on one of these allotments by the Soil Conservation Service or Forest Service and the rancher, BLM will assist as needed and may contribute to range developments on public lands. Many of the "C" allotments are small parcels of public land interspersed with large areas of privately-owned land. Bureau of Land Management supervision and monitoring will be minimal in these allotments. Examination of the small parcels will be made to determine sale, exchange or exchange pooling potential as budget and personnel permit.

Cooperative Management

The success of BLM grazing management is very dependent on the cooperation and efforts of the livestock operators. The ranchers are responsible for maintenance of most range improvements and expected to contribute to the original cost of many improvements. Their cooperation is very important in rangeland monitoring, particularly in providing actual livestock use data.

TABLE 1.2: MONTANA STATE BLM POLICY ON MONITORING BY MANAGEMENT CATEGORY

	Selective Management Category[1]		
	(M) Maintenance	(I) Improvement	(C) Custodial
Actual Use	Desirable	Required	Optional
Utilization	Optional	As needed to adjust or check carrying capacity during first grazing cycle.	Optional
Trend	Photo Evidence (desirable)	Photo evidence plus other data gathering techniques needed to monitor specific management objectives.	Photo Evidence (optional)
Climate	Optional	The effects of climate and annual fluctuations as related to management actions.	Optional

[1]Monitoring is to be focused on the "I" category allotments and AMPs regardless of category.

Source: BLM, 1982

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2. Public Affairs

The resource area has a considerable workload in public affairs associated with the Pryor Mountain Wild Horse Range, recreation, wilderness, wildlife management and other resource uses, and it's expected this workload will continue at or near current levels.

3. Wildlife and Fisheries Program

Fish and wildlife habitat for game and nongame species will be evaluated on a case-by-case basis as required in BLM's multiple-use planning process for all proposed actions. Each evaluation will consider the significance of the proposed action and the sensitivity of known habitats in the affected area. Stipulations will be attached to mitigate significant adverse impacts and assure compatibility of the action with the management objectives for fish and wildlife habitats.

Habitat and range improvement projects will be implemented where necessary to maintain and/or improve habitat conditions for game and nongame species. Range improvements will generally be designed to achieve both wildlife and range objectives. Range water developments will be designed to facilitate use by wildlife and water will be provided in allotments (including rested pastures) during seasonal periods of need for wildlife. Water sources will be located where significant conflicts over available vegetation will not occur. Existing fences will be modified and new fences built to facilitate the free movement of wildlife. Bureau of Land Management Manual 1737 standards will be utilized.

Food, cover, water and space objectives for wildlife will be incorporated into all existing and proposed new allotment management plans. Objectives will be specific to areas of key wildlife use.

Vegetative manipulation projects will be designed to minimize impacts to key wildlife habitats and preferably to improve them whenever possible. The Montana Department of Fish, Wildlife and Parks will be consulted in advance of all vegetative manipulation projects excluding timber harvest.

Animal damage control programs will be coordinated with the U.S. Fish and Wildlife Service and, in the case of aerial gunning requests, the Montana Department of Livestock will be consulted.

Management actions within floodplains and wetlands will include measures to preserve, protect, and if necessary, restore their natural functions (as required by Executive Orders 11988 and 11990). Management techniques will be used to minimize the degradation of streambanks and the loss of riparian vegetation. Bridges and culverts will be designed and installed to maintain adequate fish passage.

The preservation or enhancement of riparian and woody floodplain habitat types will be taken into consideration in developing all livestock grazing systems and pasture designs.

No surface disturbing or management activities will be allowed in habitats occupied by threatened or endangered species which could jeopardize the continued existence of such species. The Montana Department of Fish, Wildlife, and Parks and the U.S. Fish and Wildlife Service will be consulted prior to implementing projects that may affect habitat for threatened and endangered species. If a "may effect" situation is determined through the BLM biological assessment process then consultation with the U.S. Fish and Wildlife Service (USFWS) will be initiated as per Section 7 of the Endangered Species Act of 1973, as amended. Areas displaying high potential or having documented historical threatened or endangered species habitat will be evaluated in consultation with the U.S. Fish and Wildlife Service for possible reintroduction in support of the endangered species recovery plan.

No coal reserves will be leased or developed within the resource area prior to completion of wildlife inventories and application of Unsuitability Criteria numbers 9 through 15. Appendix 1.9 summarizes data currently available, and inventories to be completed.

Public information and awareness programs will be presented to schools, service organizations and any other interested groups concerning the BLM's wildlife management program and objectives.

4. Fuel Wood Permits

The resource area will continue to provide fuel wood permits when possible.

5. Recreation Programs

The resource area's recreation program will continue to install and maintain road signs (approximately five new signs per year); cleanup and minor maintenance of seven recreation sites; conduct three to five tours of Mystery Cave (40-50 people per year); process an off-road vehicle permit for an annual cross-country motorcycle race; resolve user conflicts; provide free use permits; implement a national trail activity plan; and manage environmental education sites.

Recreation resources will continue to be evaluated on a case-by-case basis as a part of project level planning. Such evaluation will consider the significance of the proposed project and the sensitivity of recreation resources in the affected area. Stipulations will be attached as appropriate to assure maximum compatibility of projects with recreation management objectives.

6. Visual Resources

Visual resources will continue to be evaluated as a part of activity and project planning. Such evaluations will consider the significance of the proposed project and the visual sensitivity of the affected area. Stipulations will be attached as appropriate to assure maximum compatibility of projects with management objectives for visual resources.

7. Cultural Resources

Cultural resources constitute a BLM program in their own right. The BLM's objective is to manage them in a stewardship role for public benefit. The Department of Interior has issued instructions setting forth this management structure through a "use evaluation" system. The purposes of the system are for the analysis of scientific and socio-cultural values of cultural resources, to provide a basis for land use allocation of cultural resources, to make cultural resources an important part of the planning system and to identify information needed when existing documentation is inadequate to support a reasonable cultural resource-based land use allocation.

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The evaluation of cultural resources requires the consideration of actual or potential use of individual sites or properties within the following categories:

A. Socio-cultural Use. This category refers to the use of an object (including flora and fauna), structure or place based on a social or cultural group's perception that the object has utility in maintaining the group's heritage or its existence.

B. Current Scientific Use. This category refers to a study or project in progress at the time of evaluation for which scientists or historians are using a cultural resource as a source of information which will contribute to the understanding of human behavior.

C. Management Use. This category refers to the use of a cultural resource by the BLM, or other entities interested in the management of cultural resources, to obtain specific information (other than basic inventory data) needed for the reasonable allocation of cultural resources or for the development of effective preservation measures. This category includes study plots allocated to examine specific impacts and deterioration.

D. Conservation for Future Use. This category refers to the management of cultural resources by segregating them from other forms of appropriation until specific conditions are met in the future. Such conditions may include, but are not limited to, development of research techniques which are presently not available, or the exhaustion of all other resources similar to those represented in the protected sample. The category is intended to provide long-term preservation and protection of select cultural resources.

E. Potential Scientific Use. This category refers to the potential use of a cultural resource as a source of information which will contribute to the understanding of human behavior, utilizing research techniques currently available.

Significant sites or districts will continue to be managed for their cultural resource values. Management will emphasize appropriate site use through the development of specific activity plans which identify cultural resource protection and use objectives, establish the actions BLM must take to achieve its objectives and outline procedures for evaluating accomplishments (see Appendix 1.10).

8. Fire Policy

It's BLM policy that the Billings Resource Area respond to all fires on or threatening public lands.

The resource area employs two 3-man crews from approximately June 15, through September 15. One crew is stationed at the resource area office in Billings, Montana and the other is located at the BLM warehouse in Bridger, Montana. Firefighting equipment consists of two 200-gallon pumping units mounted on two 1-ton trucks and enough hand equipment for four 20-man fire crews.

The BLM has an operating plan in effect from June 15 to September 15, with the Red Lodge Forest District of the Custer National Forest. Under this plan, the BLM will provide initial attack on all fires in the Pryor Mountain area.

Written agreements with local fire departments in Bridger, Custer, Worden, Shepherd, Huntley, Belfry and Absarokee, Montana, state that these departments will provide initial attack assistance on fires in their areas for up to 6 hours, or until the arrival of BLM fire crews.

A written agreement for fire control cooperation also exists between the State of Montana and the BLM Montana State Office, Billings. The primary objective of this agreement is to provide for maximum cooperation for fire control efforts in areas of intermingled or adjacent state and Federal land jurisdictions. Fire control activities between the state and BLM are decided on an annual basis through written operational plans.

In addition, the BLM, State of Montana, Department of State Lands, Division of Forestry and cooperating counties throughout Montana maintain an agreement whereby the state coordinates with the counties to supply equipment, training and manpower for fire suppression from the BLM. A cooperative agreement with the state or a direct agreement with BLM is necessary before BLM can respond to calls for fire control assistance on non-BLM administered lands. Counties with cooperative agreements through the state within the Billings Resource Area are Wheatland, Golden Valley, Yellowstone, Big Horn, Stillwater and Sweet Grass.

9. Lands Programs

Most of the present lands program (approximately 30 cases per year) is generated through user-initiated proposals or applications. Inquiries and proposals are received from federal, state, and local governments, private companies, organizations, and individuals. Proposals are evaluated on a case-by-case basis, and include the following types of actions:

A. Right-of-way applications are received from individuals or companies interested in acquiring access across, or locating facilities on, public land.

B. The Federal Land Policy and Management Act authorizes short-term permits or long-term leases for uses of the public land including agricultural use, recreational use, facility siting, sanitary landfills, etc.

C. The Recreation and Public Purposes Act authorizes BLM to administer lease or lease option agreements for use of the public land for public purposes, such as parks, fishing access sites, campgrounds, rodeo grounds, rest areas, etc.

D. Proposals to dispose of public land by sale or exchange and acquire surface or subsurface acreage are received mostly from private individuals and companies although the BLM may initiate some proposals.

All lands cases processed within the resource area are subjected to site-specific analysis within the Environmental Assessment/Land Report (EA/LR). The Federal Land Policy and Management Act and BLM regulations require that the EA/LR show that all recommended actions are not only consistent with existing land-use plans, but also that the public interest is well served by the proposal.

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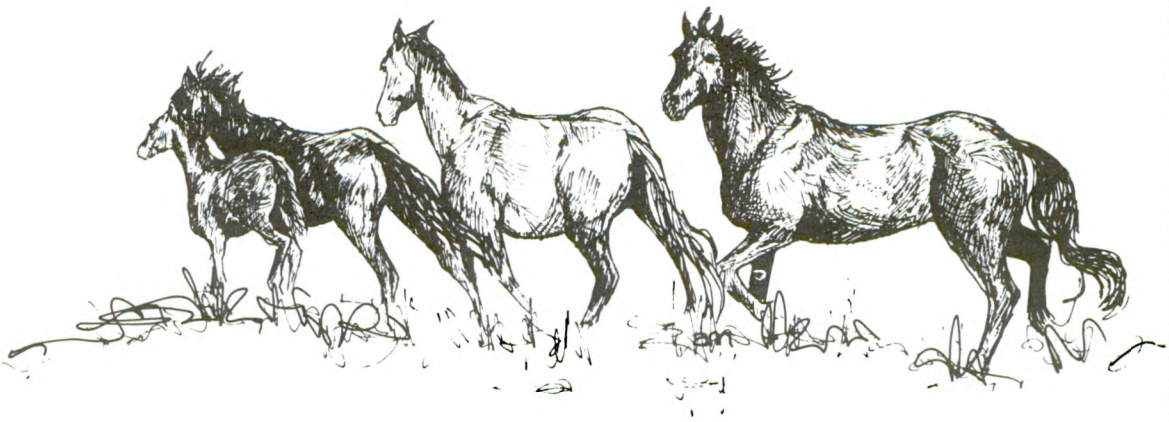

TWO

THE ALTERNATIVES

INTRODUCTION

Four land use plan alternatives, including the Bureau of Land Management's (BLM's) Proposed Land Use Plan, are described in this chapter to provide readers and decision-makers with a means of examining alternative actions and resulting impacts, using a combination of proposals.

The four alternatives described in this final environmental impact statement (FEIS) are: BLM's Proposed Land Use Plan, the Continuation of Existing Management Alternative, the Low Level Management Alternative and the High Level Management Alternative. Alternative themes precede the discussion of each alternative and provide commonality in the way proposed actions are presented to solve resource problems.

The alternatives are described in both the short and long term. The short term is an 8 year implementation period during which all proposed actions within this document would take place. All responses to range developments would be assumed to take place in the long term, 17 years after implementation of an action. Although several soil subgroups respond rapidly to some management practices and/or land treatments, and could be expected to respond sooner, this response is analyzed as taking place in the long term.

Table 2.5, at the end of this alternative description section, is a summary of the four alternatives and their effects by resource. Following Table 2.5 is a summary of environmental consequences by alternative (Table 2.6).

THE PROPOSED PLAN

The Proposed Plan was selected by a team composed of the District Manager, Area Manager, Team Leader, and appropriate team specialists. It was reviewed by the State Director. It was selected based on (1) issues raised throughout the planning process, (2) public input received during the formal 90-day comment period and at meetings, and (3) the environmental analysis developed on the previously-formulated alternatives in the draft environmental impact statement (DEIS).

The Proposed Plan segment of this chapter describes the proposed management objectives by resource, the recommendations or actions required to obtain those objectives and the rationale for selecting a particular alternative level.

HOW THE PROPOSED PLAN WILL BE IMPLEMENTED AND MONITORED

A record of decision will be issued following publication of this final environmental impact statement on the proposed resource management plan (RMP). Printed with the record of decision will be the final RMP. The final RMP will contain the decisions on all the land use recommendations proposed in this FEIS. It will also contain implementation criteria and a monitoring plan.

The implementation criteria will guide the order in which projects are implemented. These criteria will be tied to the budget process and will be applied annually to determine the projects that will be accomplished first, second, and so on. The monitoring plan will outline monitoring programs for evaluating the effectiveness of plan proposals such as forage allocations and wildlife improvements. Monitoring will determine whether assumptions were correctly applied and impacts correctly predicted. Monitoring will also help to establish long-term use and resource condition trends for the resource area and will provide valuable information for future planning.

The record of decision will be the approval authority for implementing the land use allocations and other actions contained in the final RMP. If budgetary capabilities permit, maps depicting the proposed plan actions by resource will be printed with the record of decision.

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PROPOSED LAND USE PLAN

The Proposed Plan is a modified version of the Preferred Alternative presented in the DEIS released to the public in April 1983. To aid in comparing the two versions, arrows ➡ have been placed in the margins to indicate changes to the Preferred Alternative.

Grazing Management

Resource Objectives and Recommendations

The resource objective for improve ("I") allotments would be to improve poor and fair range condition to fair and good range condition through implementation of improved grazing management and vegetative manipulation practices. Because of topography, soil limitations and wildlife habitat concerns, it isn't feasible to strive for 100% improvement on all poor and fair condition range. As a general guide, allotment management plans (AMPs) developed under this alternative would be designed to achieve 80% good condition on key livestock use areas (key areas being defined as drainage bottoms and flatter areas that normally receive at least moderate use and have the capability to respond to grazing treatments or vegetative manipulation practices).

The objective for maintain ("M") allotments, where it's economically advantageous to do so, would be to improve range condition and increase forage production through vegetative manipulation and prescribed grazing treatments while maintaining current satisfactory condition on the remaining "M" allotments.

The objective for custodial ("C") category allotments would be to continue custodial management.

The livestock production objective would be to maintain current proper use allocations in the short term, while increasing potentially available livestock forage in the "I" allotments and selected "M" allotments. Where current allocations exceed proper use, the objective would be to determine the proper use level through monitoring and allocate livestock forage accordingly.

Table 2.1 shows the recommended methods and treatments for allotments considered in this alternative as well as the management objectives for each "I" allotment.

Proposed Allocation

In this alternative, 62,437 animal unit month (AUM) authorizations to 333 operators would continue in the short term. Intensive monitoring of actual livestock use and forage utilization would be conducted on the Dryhead and Upper Sage Creek allotments to determine proper stocking levels. Less intensive monitoring of stocking levels would be done on the remaining "I", "M" and "C" allotments. Any reductions in livestock use would be phased in over a 5 year period, according to BLM grazing regulations.

In the long term, it's assumed that increased forage, available under proper use, would be allocated to livestock. This increase is estimated to be 10,711 AUMs after allocations have been made to other resource values such as wildlife, watershed, soils, etc.

Grazing Treatments and Systems

Sixteen new AMPs would be developed on "I" category allotments and six existing AMPs in the "I" category would be revised. Allotment-specific objectives would be developed to resolve resource conflicts and improve resource conditions on these "I" allotments. Grazing systems incorporating rest and deferment treatments would be designed to achieve these objectives. A total of 87,679 acres, of which 43,114 are in fair and poor range condition, would have improved grazing systems. Current grazing systems in 18 "M" category existing AMPs would be continued. Table 2.2 summarizes the proposed management in this alternative.

Proposed Range Improvements

In this alternative, 21,520 acres of dense sagebrush would be burned, 1,700 acres dominated by blue grama and fringed sagewort would be chiseled or disced and 5,118 acres of crested wheatgrass would be hayed or mechanically treated to increase forage production, improve range conditions and reduce erosion.

Structural improvements would include: 16 reservoirs, 10 wells, 2 spring developments, 31 miles of stockwater pipelines, 47 water catchments and 46 miles of fence. Water catchments, although costly, would also benefit some wildlife species.

A coordinated noxious weed program among BLM, local weed boards and landowners would be pursued in this alternative. The amount of acreage controlled would depend on the amount of cooperation of other landowners and weed control agencies. An accurate inventory of infested acres is needed. Since so many factors are involved that limit a meaningful estimate of acreage sprayed in this alternative, it's assumed for this analysis that only the current control program (45 acres) in the Paradise Allotment would be accomplished in the short term. The cost of this program would be $15,000 as explained in the Continuation of Existing Management Alternative.

The total cost of the improvements in this alternative would be $995,725 (see Appendix 2.1 for summary of current costs for each type of improvement).

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TABLE 2.1: METHODS AND/OR TREATMENTS CONSIDERED

	Allotment	Grazing Treatments		Vegetative Manipulations				Range Improvements					
		Rest	Defer	Sagebrush	Native Range	Crested Wheat	Noxious Weeds	Reservoirs	Fences	Springs	Catch-ments	Pipelines	Wells
	1083			X							X		
	4101			X		X					X		
	4125								X		X		
	4137										X		
	4940	X		X		X							X
	4945		X	X		X		X	X				X
	4946		X	X		X						X	X
	4947		X	X	X							X	
	4948	X			X			X	X			X	X
	4954		X	X									
I	4969		X	X		X			X				
	4971	X	X	X	X	X			X			X	
	5202			X				X			X		
	5203			X							X	X	X
	5210			X							X		
	5224			X		X					X		
	5311	X		X									
	5320		X			X			X			X	
	5321	X		X		X							
	5356	X		X		X							
	5367		X	X									
	5371		X	X									
	Subtotals (Units)			14,120	1,700	5,118		4	13 mi.		19	21 mi.	9
	4111			X			X						
	4114			X									
	4119			X				X					
	4131			X									
	4941		X										
M	4988		X										X
	5213			X							X		
	5214			X									
	5217			X							X	X	
	5225			X							X	X	
	5235								X		X	X	
	1033			X				X	X	X	X		
	Subtotals (Units)			6,600			45	12	33 mi.	2	28	4 mi.	
	1005			X									
C	1011			X							X		
	4105			X								X	X
	4115			X							X		
	Subtotals (Units)			800							X	6 mi.	1
	Grand Totals All Allotments			21,520	1,700	5,118	45	16	46 mi.	2	47	31 mi.	10

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TABLE 2.1: METHODS AND/OR TREATMENTS CONSIDERED (cont.)

Following are the objectives and the methods available to resolve the problems/conflicts within the 22 "I" allotments.

Range Condition

Objective: Strive to achieve and maintain 80% good and excellent range condition on key areas within an allotment.

Methods: Implement grazing systems (Alt. A, C, D), vegetative manipulations, (Alt. C, D), reduction in livestock numbers (Alt. A, B, C, D).

Season of Use

Objective: Provide periodic deferment from grazing during the growing season for native species.

Methods: Implement grazing systems (Alt. A, C, D), develop tame pasture, i.e. crested wheatgrass for spring use (Alt. C, D), adjust season of use (Alt. A, B, C, D).

Carrying Capacity

Objectives: Where monitoring indicates the AUMs allocated to livestock in an allotment exceed the current carrying capacity, the stocking level would be reduced to ensure proper use.

Methods: Reduce livestock forage allocations to proper use level (Alt. A, B, C, D).

Distribution

Objectives: Improve distribution to alleviate or eliminate livestock concentration areas.

Methods: Range improvements, i.e. fences, water developments (Alt. A, C, D), salting and mineral placement (Alt. A, B, C, D).

Watershed

Objective: Stabilize watershed conditions where grazing management or range condition is contributing to excessive erosion.

Methods: Implement grazing systems (Alt. A, C, D), vegetative manipulations (Alt. C, D), reduce livestock forage allocation (Alt. B).

"I" Category Allotments
Problems and/or Conflicts

Allotment	Range Condition	Season of Use	Carrying Capacity	Distribution	Watershed
1083	X	X		X	
4104	X	X	X	X	X
4125	X	X	X		
4137	X	X			
4940	X			X	
4945	X				
4946	X	X			
4947	X				
4948	X			X	
4954	X				
4969	X	X			X
4971	X	X		X	X
5202	X	X		X	
5203	X	X		X	X
5210	X			X	X
5224	X	X			X
5311	X				X
5320	X	X			
5321	X				X
5356	X				X
5367	X			X	
5371	X				X

Source: Billings Resource Area, 1982.

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Monitoring

Monitoring would vary with management category (see Table 2.2). Permanent trend studies are located in 67 allotments and monitoring would continue, with the 22 "I" allotments receiving the greatest emphasis. Actual livestock use and utilization data would be collected on "I" allotments where there is a need to closely monitor the level of livestock use.

Rationale

Current policy directs the BLM to focus available funding and manpower on those areas where problems and conflicts exist. The inventory conducted in preparation for this RMP was designed to assess the current condition and identify problem areas. From the information available, each allotment was placed in one of three categories; "I" Improve, "M" Maintain, or "C" Custodial. Attention would be focused on the "I" allotments with second priority on those "M" allotments where less critical problems exist and finally the "C" allotments where conflicts arise.

A range survey was conducted in the 1960's and AUMs available to livestock, after consideration for wildlife, vegetation and watershed maintenance, were adjudicated to the livestock operators. Those AUMs that were traditionally used but were in excess of what the survey showed were carried in suspended nonuse. The 1981 survey showed for the most part, that the adjudicated AUMs on the public lands were an accurate reflection of the available forage under proper use. No adjustments in authorized use were proposed initially. However, those allotments where the adjudicated preference appears to be excessive, were placed in the "I" category and would be monitored intensively to determine a proper stocking level. All other allotments would be monitored at a level to determine if the allotment objectives are being met and, in the case of those allotments in satisfactory condition, at a level to detect any undesirable changes.

Range improvement efforts would be concentrated on the "I" allotments. Improvements displayed in this document are estimates. These improvements are needed to improve distribution and facilitate management needed to resolve grazing related conflicts. Vegetative manipulations are required to improve conditions for livestock, watershed and wildlife because grazing management would have no effect or the response period would be extremely slow. Each proposed improvement must have a cost/benefit analysis completed before approval. The Range Program Summary which will be written following this RMP will be prepared in consultation with the range users and other agencies. Each project will be analyzed as to its cost effectiveness and assembled in priority within, as well as between, allotments. Final project submissions may be different than those displayed in this document.

Wild Horse Management

This proposed action would balance population levels with the forage available for horses by herd area. The population of a herd area would be held at a level that provides opportunity for improvement of range condition, herd health and viability, wildlife habitat and watershed condition, or maintains these in good condition.

Resource Objectives and Recommendations

The resource objectives in this proposed action would be to maintain a viable breeding herd which could perpetuate the characteristics of the Pryor Mountain wild horses; maintain 2,775 acres that are currently in good range condition; prevent further deterioration of range sites in less than satisfactory condition and to achieve an upward trend in range condition on those range sites. The primary benefit will be a healthier, more viable horse herd.

Under this proposed action, the initial stocking level would be 121 adult wild horses; 46 on Tillett Ridge, 44 on Sykes Ridge and 31 on the Dryhead herd area. These numbers are based on current estimates of grazing capacity for each herd area. These numbers are also dependent on the continuation of current agreements which allow wild horses to graze areas outside the designated wild horse range boundary.

The initial target allocation for wild horses would be 121 head (it's estimated that 80% of this number would be 2 years old or older). Actual numbers may vary from year to year due to variations in foal crops, natural death loss, forage productivity and other factors including budgetary constraints.

TABLE 2.2: SUMMARY OF PROPOSED MANAGEMENT

Type of Allotment	Category	Number	Acres	AUMs
Existing AMPs	Maintain	16	65,590	12,259
Existing AMPs	Custodial	2	42,553	2,872
Revised AMPs	Improve	6	46,486	4,809
New AMPs	Improve	16	41,193	8,411
New AMPs	Maintain	140	144,634	24,059
New AMPs	Custodial	213	58,932	10.027
Total		393	399,388	62,437

Source: BLM, 1982

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During the short-term period (8 years), monitoring studies would be conducted to confirm or modify the initial estimates of grazing capacities and trends in habitat conditions. Data from these studies would be used to modify the initial target allocation, either upward or downward.

During the long term (25 years), the number of wild horses in a herd area would be permitted to increase if monitoring showed that additional forage were available. Ultimately, the Pryor Mountain Wild Horse Range (PMWHR) has the potential to support up to 179 wild horses yearlong. This assumes all areas now grazed by the wild horses would continue to be available to the horses. However, the projected long-term population increase in this alternative is considerably less than the potential level of 179 head since no rotational grazing systems would be in effect.

Improved wild horse grazing habits and distribution would be attempted by controlling their access to water sources. When the average utilization on important grasses within the area serviced by a water source reaches 45% by weight, access to that water source would be denied. This would stimulate the horses to move to another watered area.

To assure that non-public lands remain available for grazing by wild horses, the United States should acquire 1,560 acres from the State of Montana, and 680 acres of private land (see Map 1—Map Pocket).

The emphasis in herd management would be to limit the reproduction rate and perpetuate the characteristics of the Pryor Mountain wild horses. This would necessitate beginning a selection program to retain only those wild horses with conformation, color and breeding (genetic) characteristics typical of the Pryor Mountain wild horses.

This proposed action would require altering the current sex ratio so that it's heavier to studs than the current population. This would reduce the foal crop and minimize the need for excessing wild horses.

When it's necessary to reduce the number of horses within a herd area, the excess horses would, if possible, be relocated to one of the other herd areas. If this option isn't available, the excess horses would be disposed of through the adoption program or other legal processes.

A Wild Horse Herd Management Plan will be developed jointly between the National Park Service (NPS), Forest Service and BLM, with BLM as the lead agency after the RMP is completed and will incorporate the management direction provided by this plan.

Proposed Range Improvements

This proposed action requires minimal additional man-made improvements or facilities. Five water catchments would be required to improve grazing distribution by bands of horses. About 2 miles of fence would be needed for improving the efficiency of capturing horses and 5 miles for fencing the south boundary of the range. The estimated cost to implement this proposed action is $56,500. In the short term, the annual excessing of horses would continue, requiring an estimated $21,000 annually to gather and excess an average of 30 horses. In the long term, altering the sex ratio would reduce the foal crop, but some level of annual excessing may still be required. Costs in the long term cannot be estimated because the timing of the sex ratio reversal and its impacts to horse numbers has not been established.

Monitoring

Management progress would be evaluated to assure the level applied and the decisions made are compatible with multiple use objectives for the PMWHR. Vegetation monitoring would focus on utilization levels, movement toward reaching the stated objective of the Herd Management Area Plan (HMAP) and long-term trend (change in condition).

Studies on the wild horses would include population size, animal distribution, foraging habits and population characteristics. The studies on population characteristics would include sex ratio, age structure, social structure, animal condition and special characteristics identified in the HMAP such as selection of color.

Rationale

The primary objective is to maintain a healthy, viable herd that displays the characteristics typical of the Pryor Mountain wild horses. In order to accomplish this, the range must be kept at a condition that will provide both the quantity and quality of forage needed to sustain the herd. The Bureau has an obligation to other agencies as well as private individuals who own land within the horse use areas to ensure the basic soil and vegetative resources are not degraded.

The 1981 Ecological Site Inventory determined what stocking level the range could support in its current condition. This is a target allocation and monitoring studies would be established to determine what, if any, adjustments are needed.

The proposed water catchments are to improve wild horse distribution through the availability of water. The BLM is currently exploring new designs for catchments to improve their efficiency, aesthetics, and lower the initial cost and maintenance costs.

Two miles of fencing is proposed to facilitate the capture of the horses and is designed to reduce the stress horses are subjected to. The south boundary fence is needed to contain the horses within the range and eliminate encroachment by livestock.

Wildlife Management

The Federal Land Policy and Management Act (FLPMA) of 1976 chartered BLM with the responsibility of maintaining or enhancing the fish and wildlife habitats that occur on the public lands.

Resource Objectives and Recommendations

The Billings Resource Area operates under a number of general wildlife habitat management objectives which are utilized Bureau-wide. Each objective is mandated and/or supported by specific Federal regulation or legislation. These wildlife program objectives are common to each alternative level discussed in this RMP/EIS. The BLM wildlife habitat management program places special emphasis on, but is not limited to the protection, maintenance and enhancement of:

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— Crucial habitats for big game, upland game birds and waterfowl.

— Crucial habitats for nongame species of special interest and concern to state or other Federal agencies.

— Wetland and riparian habitats.

— Existing or potential fisheries habitat.

— Habitat for state or federally listed threatened and/or endangered species.

These commitments to the wildlife resources vary by alternative only in the level of effort devoted to each element within the program. The level of effort undertaken annually is dependent upon national priorities, Washington Office direction and the availability of funding and manpower to effectively complete the workload.

The level and intensity of wildlife habitat management activities presented in this proposed action have been selected based on feasibility, opportunity, need and associated impacts by other resource programs.

Wildlife Improvements

Five upland game bird watering devices would be installed in areas where watering sources are unavailable and no other watering facilities are planned for development. Fifty waterfowl nesting islands would be constructed in existing reservoirs in Musselshell and Yellowstone Counties. Seven existing reservoirs would be fenced to achieve desirable aquatic habitat for waterfowl and shore birds. Of these seven, three reservoirs would be fenced completely with alternate watering facilities installed and the other four reservoirs would be fenced on the upper 1/3 to include approximately 50 upland acres per reservoir. Twenty-five acres of dense nesting cover would be planted adjacent to Big Lake. Twenty raptor nest sites would be installed adjacent to 10 prairie dog colonies and at selected locations within the Yellowstone River Valley. If suitable locations are found, three fisheries reservoirs would be constructed near urban communities. With the use of acceptable grazing systems, 80% of the woody floodplain type of vegetative composition totalling approximately 41 miles within the category "I" allotments, would be maintained or improved to good or excellent range condition.

The maintenance of existing facilities would be completed as needed and would receive priority for available funding over the construction of the above mentioned new project developments.

Habitat Management Plans

A habitat management plan would be developed for chukar partridge. In the long term, consideration would also be given to developing habitat management plans for such species as mule deer, antelope, bighorn sheep, sage grouse, sharptail grouse, waterfowl, raptors, prairie dogs and fisheries. These species have been selected due to their uniqueness in the resource area, obvious opportunities for enhancement or public demands for increased availability. Completion of these plans would be dependent upon availability of funding and manpower.

Land Acquisition

A program to identify a limited amount of non-Bureau lands desirable for fish and wildlife habitat would be initiated. Attention would be focused on waterfowl nesting areas such as Halfbreed and Big Lakes, big game winter ranges, high value upland game bird habitat, active and/or potential fisheries habitats and important nongame and threatened and endangered species habitats. Future acquisition of these lands would occur predominantly through land exchange.

Monitoring

The wildlife program would focus on completing 60,000 acres of terrestrial habitat monitoring yearly. This would allow a 3 year cyclic collection and update of habitat condition on all big game winter concentration areas, upland game bird nesting areas, the PMWHR, the 24 implemented AMPs and those "I" and "M" allotments in which potential habitat conflicts exist. Surveys would be conducted in 12 selected waterfowl concentration areas to collect utilization and average annual brood numbers. Approximately 300 acres of known prairie dog colonies would be surveyed annually for the occurrence of black-footed ferrets and to update colony size data. Due to the relatively small acreages of prairie dog towns occurring on public lands, this intensity would provide a minimum of a 3 year cyclic update of all colonies.

Approximately 10 miles of streams with active fisheries would be surveyed per year to collect species occurrence and habitat condition data. This effort would concentrate on the Musselshell, Clarks Fork, Yellowstone, Sage Creek, Crooked Creek and Bad Canyon Creek drainages. Three reservoirs would be surveyed annually to determine their suitability for fisheries stocking. A very limited number of existing reservoirs have fisheries potential and at this intensity, all those possessing potential can be evaluated in the short term.

Coordination

All major wildlife habitat enhancement projects would be coordinated with regional personnel of the Montana Department of Fish, Wildlife and Parks (MDFWP). As mandated in a joint memorandum of understanding with the MDFW&P, all projects involving vegetative manipulation would be presented to the regional personnel for comments and recommendations in advance of project initiation.

Informal and formal consultation with the U.S. Fish and Wildlife Service (USFWS) would be initiated on all proposed actions which may affect any Federally listed threatened or endangered species. Consultation would be done in accordance with Section 7 of the Endangered Species Act, as amended.

A state-Federal interagency team of wildlife biologists has been established to review and make final recommendations on the application of the Federal coal program wildlife unsuitability criteria for the Bull Mountain area. This effort would be continued in consultation with the USFWS and the MDFWP.

Implementation Costs

It is estimated that the total cost of improvements to implement this proposed action is $75,500 (see Appendix 2.2 for a summary of estimated costs for each type of improvement).

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Rationale

- The level of surveys and monitoring proposed would allow a 3 year cycle for intensive studies on all big game and upland game bird crucial habitats and all existing fisheries habitats. Annual waterfowl surveys would be conducted in major concentration areas. Threatened and endangered species habitat, or potential habitat would be surveyed annually. Inventories needed to fully apply the Federal coal wildlife unsuitability criteria numbers 9 through 15 would also be completed prior to leasing any Federal coal.

- The decision to complete a habitat management plan (HMP) for chukar partridge was made because of the uniqueness of the species to the Billings Resource Area. The major portion of chukar year around habitat within the resource area is on public lands. Upon completion of the coordinated management plans for grazing management, species such as mule deer, antelope, bighorn sheep, sage grouse, sharptail grouse, waterfowl, raptors, prairie dogs and fisheries will receive priority consideration for HMP development where the coordinated management plans could not meet the overall objectives for the individual species.

- All improvements were selected based on feasibility, compatibility with other proposed actions and the level of development which has been historically funded. The levels chosen would also allow for annual maintenance of all existing facilities.

- Nonstructural improvements were chosen pursuant to BLM's mandate under Executive Orders 11988 and 11990 to preserve, protect and if necessary, restore floodplains and wetlands to their natural function.

Timber Management

Resource Objectives and Recommendations

The resource area would meet local demand for timber products through small negotiated sales. Additionally, occasional advertised sales would be held which could amount to sales up to 1 million board feet (MMBF) being offered in the Twin Coulee area. An annual cut of 70 thousand board feet (MBF) over 30 acres is expected to occur. In the short term (8 years), 560 MBF would be harvested on 240 acres. In the long term (25 years), 1,750,000 would be harvested on 750 acres.

A total of 9,500 acres of forested land would be protected from cutting, except where needed for other resource value or concern such as watershed, safety or wildlife. The protection area includes the Pryor Mountain WSAs, Bad Canyon, Young's Point, Hamilton's (Asparagus) Point, Shepherd Ah-Nei and the Acton area.

Rationale

- This proposed action would allow continued small negotiated sales and occasional advertised sales to meet the local demand for timber products. This type of timber management would allow a reasonable harvest of timber products while protecting other resource values such as watershed and wildlife habitat.

- A sale of up to 1 MMBF could occur in the Twin Coulee area if it isn't designated wilderness by Congress and if local demand warrants.

Coal

The scenario of two coal mines (150,000 and 300,000) as described in the Low Level Management Alternative is projected for this alternative as well.

Resource Objectives and Recommendations

There are 9,360 acres of Federal coal in the Bull Mountains found acceptable for further consideration for leasing, pending further study (see Figures 2.1 and 2.2). These areas overlie Federal coal which is of high or moderate development potential, based upon a 20:1 (overburden to coal) stripping ratio. See Table 2.3 for a breakdown of the acreages and tonnages dropped and carried forward for further consideration for leasing pending further study.

Current industry standards for coal recovery average 150 feet of overburden or a 6:1 stripping ratio, whichever is less. In the Bull Mountains, average thickness of the combined Mammoth-Rehder bed is 11 feet and the McCleary bed is 8 feet. Disregarding the interburden which separates the coalbeds, surface mining to a depth of 114 feet would be the current economic limit. This fact would greatly constrict mineable acreage of the area found acceptable for further consideration pending further study. During the Coal Activity Planning Process, the Regional Coal Team must give strong consideration to surface mining only of the high potential coal (coal within the 10:1 stripping ratio line) if the coal from the Bull Mountains is to be economically competitive. This would tend to discourage large surface mining operations, yet support the smaller operations described in the mining scenario (see Appendix 2.3). It is reasonable to assume that the deeper coal resource would be developed through underground mining methods. The overall effect of this activity planning recommendation would be a reduction of the area found acceptable for further consideration pending further study, from 9,360 acres (20:1 ratio) to 4,704 acres (10:1 ratio). Appendices 1.9, 2.4 and 2.5 show the effects this change would have on the unsuitability criteria. More specific information concerning the surface owner consultation process is included in the Billings Resource Area management situation analysis which is available for inspection in the Billings Resource Area Office.

All the Federal coal which is mineable by underground methods is suitable for further consideration for leasing or exchange pending further study. The BLM would not apply coal unsuitability criteria to these areas until a site-specific mine plan is filed, detailing the proposed location of surface facilities.

This decision also eliminates from further consideration for leasing (Federal coal which is potentially surface mineable) the following acreages in the Bull Mountains:

10,920 acres eliminated because of surface owner opposition

2,480 acres eliminated because lands are subdivided

418 acres eliminated as a result of the unsuitability application

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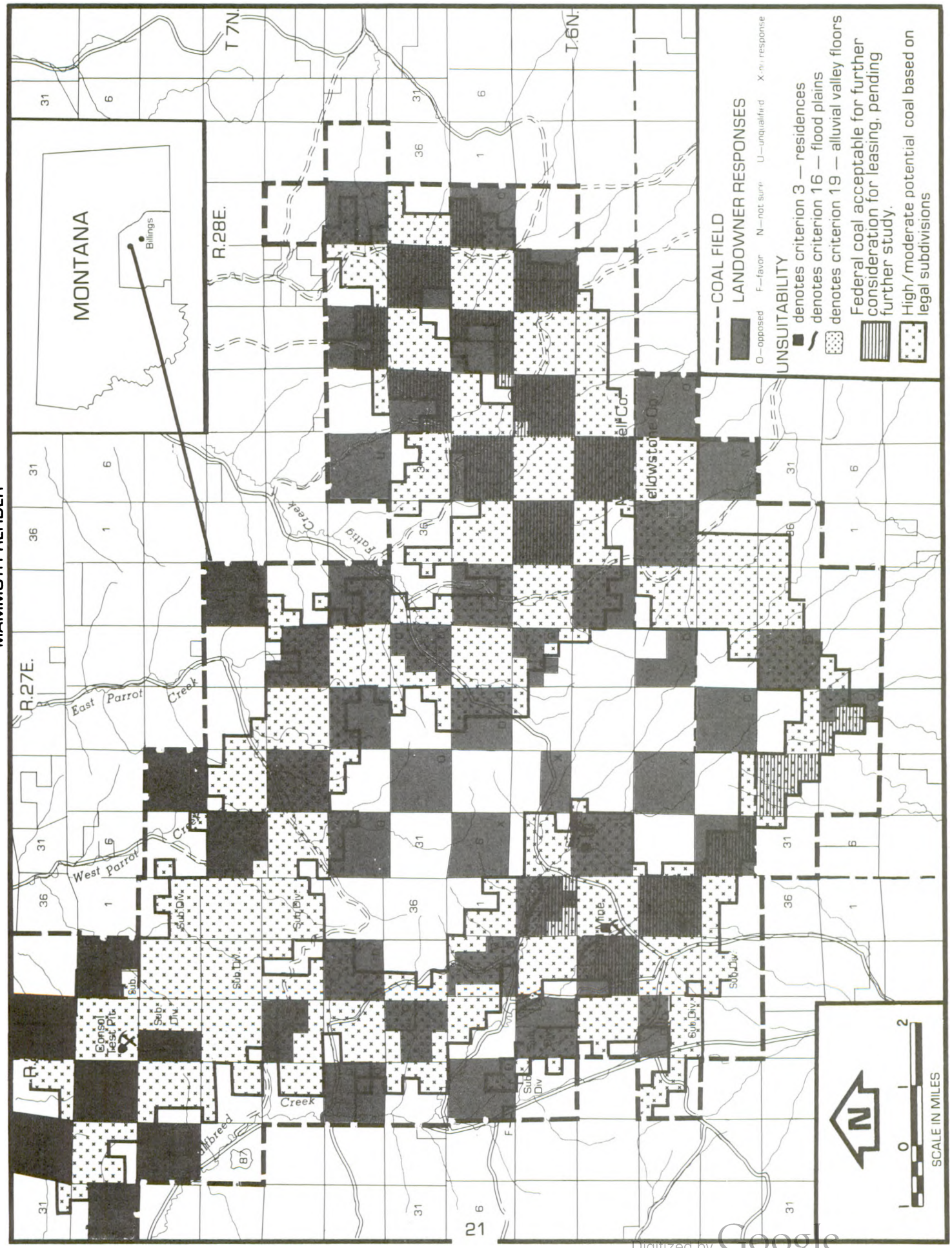
Figure 2.1: Mammoth Rehder Coal Bed — Application of Planning Screens. (20:1 ratio)



MAMMOTH-REHDER

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Figure 2.2: McCleary Coal Bed — Application of Planning Screens.

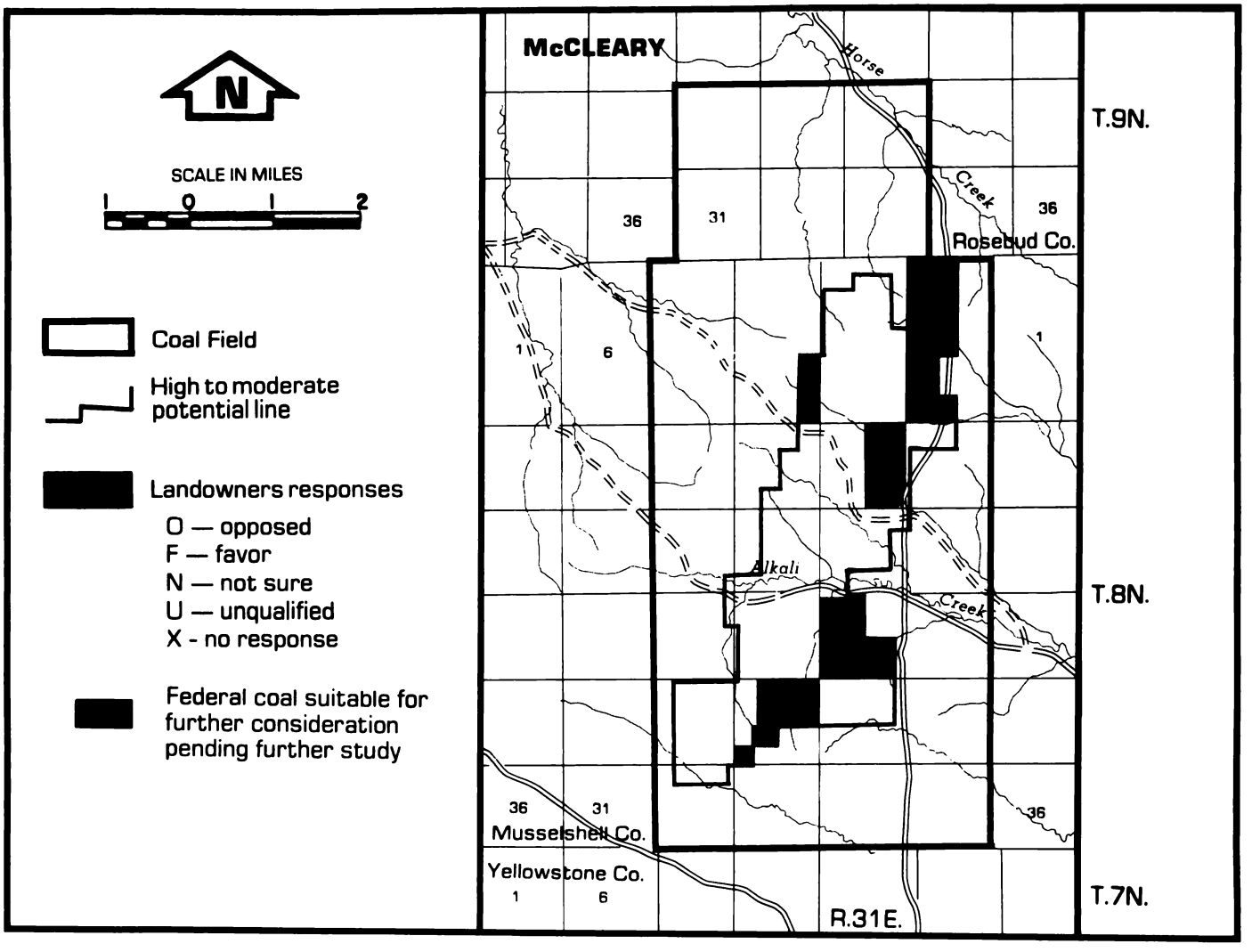

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TABLE 2.3: RESULTS OF SURFACE OWNER CONSULTATION AND APPLICATION OF COAL UNSUITABILITY CRITERIA

High/Moderate Potential Federal Strippable Coal

		22,860 acres		**326 MM tons**
I.	**Surface Owner Consultation**		**Unacceptable Coal**	
	Surface owners opposed to leasing for surface mining	10,920 acres		174.3 MM tons
	Federal lands within established subdivisions	2,480 acres		36 MM tons
	Federal coal acceptable for further consideration	9,480 acres		116.7 MM tons
II.	**Unsuitability Criteria Application**		**Unsuitable Coal**	
	Criterion #3: roads	0 acres		0 tons
	dwellings	24 acres		350,000tons
	Criterion #16: floodplains	96 acres		1,500,000 tons
	Criterion #19: possible AVF	298 acres		0 tons*
	Federal coal suitable for further consideration pending application of Criteria #7 and #9-15	9,360 acres**		114.85 MM tons**

* Final determination of alluvial valley floors has not been made; acreage will not be eliminated until final determination by OSM.
** These acreages and tonnage totals consider the overlap of Criteria nos. 5, 3, 16, and 19.

Source: BLM, 1982

- This alternative specifically seeks to encourage underground mining at the expense of other mining methods in the Bull Mountains. Large scale surface mining of Federal coal in the Bull Mountains would be specifically discouraged and this would be the recommendation made later in activity planning before the Regional Coal Team.
- Federal coal exchanges would be considered on a case-by-case basis.
- Production from the small surface lease (M-052647) in the Bull Mountains would be maintained through emergency leasing.

Rationale

- The High Level Management Alternative was selected as the Proposed Action because it would allow the BLM to comply with the multiple use mandates established by FLPMA and the 43 CFR 1600 regulations governing multiple use planning. Furthermore, selection of the High Level Management Alternative would allow the BLM to comply fully with the Surface Mining Coal Reclamation Act (SMCRA) and the 43 CFR 3400 regulations established to govern the Federal coal management program. This alternative contains the best mix of uses in the judgment of BLM management. The coal area found suitable for further consideration for leasing pending further study would have criteria 7 and 9 through 15 fully applied prior to leasing. Where overriding multiple use values not previously identified are found to exist, the affected coal would be removed from further consideration for coal leasing. Due to the economic feasibility of mining coal at depths greater than 100 feet (the moderate potential coal) and the larger surface acreage disturbed, it would be recommended to the Regional Coal Team during the Coal Activity Planning Process, to allow surface mining only within the 10:1 stripping ratio (high potential coal). Underground mining would be encouraged, because it is far less environmentally disruptive.

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Oil and Gas Leasing

The 70,000 acres identified in the High Level Management Alternative would be considered "sensitive" to oil and gas leasing. The draft RMP/EIS listed nine such sensitive areas. An additional seven areas have been added to the sensitive area list (refer to Appendix 2.6 and the Map Pocket Overlay). Lease applications within these areas would be routed to the resource area for application of appropriate special stipulations. Assessment may determine, especially within the PMWHR, that some areas are unsuitable for oil and gas exploration and subsequent development. Where "no surface occupancy" is recommended for an area over ½ mile from an area which may be occupied, the resource area would instead recommend no leasing (since directional drilling could not tap a possible reservoir under that land). Occupancy in other areas may be severely restricted. The remaining 579,433 acres in the resource area will be leased with standard stipulations.

Rationale

This proposed action would allow BLM to comply with the multiple use mandates established by FLPMA by allowing leases with standard stipulations on 579,443 acres and special stipulations on 70,000 acres considered sensitive to oil and gas leasing. This type of management would allow the oil and gas industry a reasonable opportunity to lease and explore, while protecting the various other resources present and provide a greater degree of protection for especially sensitive areas.

Resource Objectives and Recommendations

Impact assessment of the High Level Management Alternative indicates that resource conflicts would not, in most cases, be completely resolved if oil and gas leases are issued with special stipulations within the PMWHR, and exploration drilling follows.

The objectives would be to protect sensitive resource values, to provide a quality experience for visitors consistent with a wild horse range, not to interfere with wild horse management practices, and to be consistent with other agency plans for adjacent areas.

Land Tenure Adjustment

Resource Objectives and Recommendations

The resource objective of this proposed action is to adjust the resource area land and/or mineral base using various Bureau authorities (exchanges, sales, Recreation and Public Purpose patents, etc.) to improve management of both public and private land.

Public response to the draft EIS proposal for Land Tenure Adjustment was unanimous in support of the resource area's use of land exchanges to acquire tracts or block up public land with greater public access, recreation, wildlife habitat, or other resource values. The public responses were generally opposed to disposal of public lands by direct sale. Some concern was expressed regarding the effects of land disposal on surrounding landowners and grazing permittees.

The draft RMP/EIS identified 5,237 acres of public land as suitable for disposal within the Land Tenure Adjustment Area. Within the same area, 3,622 acres were identified as suitable for exchange. Following public comments, the resource area staff reevaluated 19 tracts of public land previously identified for disposal. This evaluation reduced the total acreage in the disposal category from 5,237 to 3,837 acres (see Appendix 2.7).

In light of public responses and further clarification of land tenure policy at the national and state levels, land exchange would be the predominant method of land adjustment and/or disposal. This adjustment in the proposed action makes the 3,837 acres of public land categorized for disposal within the Land Tenure Adjustment Area available for disposal by exchange, as well as by sale or other authorized methods of disposal. Public land in the Land Tenure Adjustment Area available for exchange now totals 7,459 acres.

Twenty-six thousand three hundred and fourteen (26,314) acres within the Land Tenure Adjustment Area have been categorized for retention.

Two thousand three hundred and eighty-two (2,382) acres of public land have been categorized for further study. Lands placed in this category would be evaluated later using the criteria defined in the State Director Guidance for Resource Management Planning in Montana and the Dakotas (Appendix 1.6).

It should be noted that land base adjustment is a tiered process involving two entirely separate and distinct actions—categorization and disposal. Categorization involves the application of certain criteria to a given tract or zone of public land for initial identification of the potential for disposal or retention. This streamlines the land tenure adjustment process by helping the resource area to focus on those lands which initially meet the disposal criteria outlined in Appendix 1.3 and in the State Director Guidance (Appendix 1.6).

Actual lands action by sale, exchange or acquisition requires a site-specific analysis prior to the recommendation. The analysis is handled in subsequent activity planning through the Environmental Assessment/Land Report (EA/LR). The EA/LR is an interdisciplinary document which examines and evaluates the effect of the proposed action on all affected resource values, which could include vegetation, watershed, wildlife, recreation, aesthetics, air quality, cultural resources, public access, and the social and economic impact to adjacent landowners, grazing permittees, and the local community.

Section 206(a) of FLPMA requires that land exchanges serve the public interest. This section of FLPMA states that an exchange may occur if "the values and objectives which Federal lands or interests to be conveyed may serve if retained in Federal ownership are not more than the values of the non-Federal lands or interests and the public objectives they could serve if acquired".

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Likewise, public lands to be disposed of by sale must meet certain FLPMA requirements. Section 203(a) of FLPMA states that public lands may be sold if:

1. such tract because of its location or other characteristics is difficult and uneconomic to manage as part of the public lands, and is not suitable for management by another Federal department or agency; or
2. such tract was acquired for a specific purpose and the tract is no longer required for that or any other Federal purpose; or
3. disposal of such tract would serve important public objectives, including but not limited to, expansion of communities and economic development, which cannot be achieved prudently or feasibly on land other than public land and which outweigh other public objectives and values, including, but not limited to, recreation and scenic values, which would be served by maintaining such tract in Federal ownership.

In summary, before a proposed exchange or sale of public land can proceed, the EA/LR must show that the proposed action accrues significant benefit to the public. The same showing is required in a minerals exchange.

When EA/LR findings are such that a public land parcel can be disposed of either by exchange or sale, and management concurs, a Notice of Realty Action (NORA) is published once in the Federal Register and at least once a week for three weeks in a newspaper with distribution in the area of the proposed action. The NORA describes the proposed action and specifies a 45 day period for public review and comment. The location of the office where individuals can review the case file is also included. Following the 45 day period, any adverse comments are responded to by the District Manager and/or State Director, who may vacate or modify the proposed action based on the comments received.

In addition to the official publication of the NORA in local papers and the Federal Register, adjacent landowners, Governor, Congressional delegation, county commissioners, and other interested parties are sent a letter of notification with a copy of the NORA attached. If the county commissioners feel it is necessary, a public hearing on the proposed action would also be held.

Several individuals expressed a concern about how the retention and disposal criteria would be applied to the uncategorized lands outside of the Land Tenure Adjustment Area. In order to address this concern, the resource area staff has delineated the remaining portion of the resource area into retention and disposal zones (see Map Overlay, Map Pocket). Approximately 364,350 acres were delineated in retention zones, while approximately 52,500 acres were delineated in disposal zones outside of the initial Land Tenure Adjustment Area described in the draft EIS. The lands in the disposal zones include approximately 10,150 acres of public land adjacent to U.S. Forest Service land along the Beartooth Face and in the Twin Coulee Wilderness Study Area (WSA) that would be proposed for exchange to the U.S. Forest Service. These tracts of public land would thus remain in public ownership. The remaining 42,350 acres of public land in the disposal zones would be suitable for disposal by any method, but predominantly through exchange (see Land Tenure Adjustment section of Table 2.5).

Exchanges would also be the predominant method of land disposal for public lands outside of the Land Tenure Adjustment Area. Lands to be acquired by exchange would generally be located within retention areas, while lands to be disposed of by exchange or sale would primarily be located in disposal areas. Based on site-specific application of the land tenure adjustment criteria in the State Director Guidance, some lands within a disposal zone, such as critical wildlife habitat, may be retained, while some lands in a retention zone may be disposed of.

Lands to be acquired should:

1. facilitate access to public land,
2. maintain or enhance important public values and uses
3. maintain or enhance local social and economic values,
4. facilitate implementation of other aspects of the Billings RMP, including:
   A. acquisition of non-BLM lands within the PMWHR
   B. facilitation of future mineral development, and/or
5. facilitate other criteria addressed in the State Director Guidance.

Existing data and an interdisciplinary analysis were utilized in delineating the boundaries of the zones (retention, disposal and further study). Specific tracts within these zones may be readjusted or recategorized as a result of site-specific analysis and input during the activity planning stage.

Rationale

Adjustment in the pattern of public land and minerals ownership within the resource area would: (1) allow for more efficient and economic management, (2) facilitate acquisition of lands with higher public values and uses and (3) facilitate implementation of other recommendations within this and other planning documents.

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Classifications

Under the Classification and Multiple Use (C&MU) Act of 1964, three areas were classified for retention (28,586 acres). They were also segregated from appropriation under the agricultural land laws, from sales under Section 2455 of the Revised Statutes, and from the operation of the mining laws but not from mineral leasing.

Resource Objectives and Recommendations

The resource objective of this alternative would be to protect from mineral entry those areas which contain significant resource values and BLM constructed improvements (see Figure 1.2 and Appendix 2.8).

Following public input and subsequent discussions with BLM archeologists, it was determined that three highly significant and unique cultural and/or paleontologic sites were located in areas covered by C&MU classifications. These are the Crooked Creek Natural Area, Petroglyph Canyon and Weatherman's Draw. The Crooked Creek Natural Area is protected from certain activities under C&MU Classification W-15468, while Petroglyph Canyon and Weatherman's Draw are included in C&MU Classification M-7991. Lifting the C&MU classifications and allowing mineral exploration in these areas could irreparably damage or destroy the extremely valuable resources contained there. It is, therefore, recommended to leave the C&MU classifications intact in these three areas until such time as a BLM protective withdrawal can be enacted.

Upon closer inspection, it was further discovered that Sykes Springs and Corral was not located within C&MU Classification W-15468, but rather within an area withdrawn from mineral entry for the PMWHR. Revocation of the C&MU classification would, therefore, not affect this site.

In addition, Mystery Cave is not located within C&MU Classification M-7991. It was previously included in an area withdrawn for the Bighorn National Recreation Area. This withdrawal has since been revoked, but an opening order was not published. The area is, therefore, not open to mineral entry. In the future, should management decide to issue an opening order for this area, a formal BLM protective withdrawal will be sought for Mystery Cave.

As stated in the draft RMP/EIS, the C&MU classifications will be continued for the Britton Springs Cabin and Corrals and Cottonwood Springs and Corral.

Because of the above-mentioned change in this proposed action, C&MU classifications will be continued on approximately 980 acres of public land, as opposed to 50 acres as stated in the draft RMP/EIS. The remaining portions of the C&MU classifications will be revoked.

Rationale

Areas containing special resource values or Federal improvements such as those stated above, require special protection from mineral entry. Areas with only nominal resource values can be adequately protected by the 43 CFR 3809 surface protection regulations.

Recreation Access

Resource Objectives and Recommendations

The Proposed Action is a combination of the Continuation of Existing and High Level Management Alternatives.

Access to the following public land areas would be pursued in this priority:

1. Exchanges would be sought through the land tenure program for lands adjacent to the Yellowstone, Musselshell, Boulder, Stillwater, Clarks Fork and Bighorn Rivers. Lands would be sought along the Yellowstone River and priority consideration given to areas near Big Timber, Springtime, Huntley and Pompeys Pillar (these locations have been recommended by the MDFWP to meet floating demand);
2. Acquire legal and physical access tothe following public land areas: (A) block of public lands 7 miles west of Pompeys Pillar bordering the north bank of the Yellowstone River; (B) Young's Point, approximately 3 miles southwest of Park City; (C) Bad Canyon walk-in access, located approximately 15 miles west of Absarokee. Where vehicular access is required, travel may be restricted to designated roads or trails. These restrictions would be determined after preparation of detailed activity plans; and
3. Legal public access would not be pursued to the large block of public land roughly bounded by the communities of Bridger, Belfry and Warren (Triangle Area) and the west side of Red Pryor Mountain unless access across privately-owned lands is denied.

Rationale

Expanding population pressure in the greater Billings area has created a demand for more recreation sites or more access to existing sites on public land. This proposed action would allow BLM to pursue recreational access to key areas without making significant changes in the land ownership pattern.

Off-Road Vehicle Use

Resource Objectives and Recommendations

The BLM would attempt to meet the demand for off-road vehicle (ORV) use on public land, while protecting watershed, visual resources and other conflicts which may occur between ORV users, adjacent landowners and permittees. The following proposed action is recommended:

1. The 3,800 acres in the Acton area would be designated as restricted to existing roads and trails and authorized use.
2. Off-road vehicle use in the Hamilton's (Asparagus) Point area would be limited to the main access road and the parking area.
3. The Shepherd Ah-Nei area, east of the county road would be designated as limited to authorized use. Authorized use would be restricted to persons holding the grazing lease, and to BLM employees for the purpose of resource management or other similar

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types of authorizations. This designation affects about 460 acres. The ORV use in the northern portion of the Ah-Nei area west of the county road (approximately 3,090 acres) would be limited to designated roads and trails and authorized use. The southern portion of the area (512 acres) would remain open (see Figure 2.3 . In the event of excessive damage, this area may be closed entirely to ORV use.

4. A 70 acre area in the South Hills would be permanently closed to all vehicle use and a 1,200 acre portion of the area would be closed to use by 4-wheeled vehicles (see Figure 2.4). Management of the South Hills ORV usage through a cooperative agreement would be pursued with the Billings Motorcycle Club and the Cedar Park subdivision.

5. Existing ORV restrictions in the Pryor Mountains (see Figure 2.5) would remain in effect except that the Bear Spring Road #1, Timber Canyon Road #2, Water Canyon Road #3, Inferno Canyon Road #4 and Demi-John Flat Road, Road #10, would be designated open. These road openings total approximately 9 miles. Turkey Flat Road, Road #11, would be designated closed except for authorized use. This would result in approximately 3 miles of road closure.The ORV use may be limited to designated roads or trails if legal access is acquired to the area 7 miles west of Pompeys Pillar and to Young's Point.

Rationale

This proposed action would allow BLM to manage a reasonable combination of ORV activities among recreationists, neighboring home and landowners, resources and resource managers. Closing 70 acres in the South Hills to ORV use should reduce conflicts between ORV users and neighboring homeowners. The BLM would maintain the option of closing the Shepherd Ah-Nei Environmental Education Area to ORV use if conflicts become too numerous. The BLM would open five roads on the west side of the Pryor Mountains in response to the U.S. Forest Service opening their connecting roads. The Turkey Flat road is needed only for administrative access to a wild horse trap and use of this road would remain restricted in order to protect wilderness values.

Environmental Education

Resource Objectives and Recommendations

The existing environmental education facilities on 77 acres would be maintained at the Shepherd Ah-Nei site as long as local groups indicated an interest in the area. If excessive vandalism occurs, the facilities would be removed and local schools would be asked to furnish comfort stations if they become necessary.

The Acton site consisting of 133 acres would not be developed until the Shepherd site use exceeds the carrying capacity of 6,000 visitors annually, or the schools express an interest in developing this area.

Rationale

This proposed action would allow BLM to continue serving the Billings school system and the public with an environmental education area and has the flexibility to allow the development of an additional education area if the demand warrants.

Wild Horse Interpretation

Resource Objectives and Recommendations

Interpretation of the Pryor Mountain wild horses and their management would be pursued as a cooperative venture between the BLM; the U.S. Forest Service, (Custer National Forest); and the NPS (Bighorn Canyon National Recreation Area). Developments formerly proposed in an already completed activity plan would not be pursued at this time. However, some additional interpretation is possible, dependent upon the outcome of the wild horse herd management plan which is to be completed by the three agencies.

Major interpretive efforts would be centered at the Lovell, Wyoming, NPS Visitor Center. Upon completion of the herd management plan, a roadside interpretive panel may be placed along the Bad Pass Highway within the Bighorn Canyon National Recreation Area. Interpretation on BLM administered lands would be limited, in most respects, to six boundary or roadside signs. No major structure or overlook is anticipated on BLM administered lands at this time though the possibility remains for development of such facilities in the future, depending on demand and budgetary capabilities.

Rationale

The Pryor Mountain wild horses graze on lands administered by the Bureau of Land Management (designated wild horse range), the U.S. Forest Service, Custer National Forest (undesignated lands) and the NPS (undesignated lands). As such, wild horse interpretation should be conducted on a cooperative basis with these agencies at a central location, preferably at the NPS visitor center in Lovell, Wyoming.

In addition, individuals visiting the PMWHR are most apt to view wild horses near the NPS Bad Pass Highway, which traverses the Bighorn Canyon National Recreation Area.

Because of these factors, the Winddrinker overlook site is not the most likely area from which to view wild horses since watering facilities which horses frequent are located approximately ½ mile north of the site and are partially hidden by the topography. Costly road improvements would also have to be made to the location and considerable Federal funds expended to develop interpretive facilities. The proposed location of the Winddrinker site is encumbered by the existence of significant archeological values which could be disrupted by any development.

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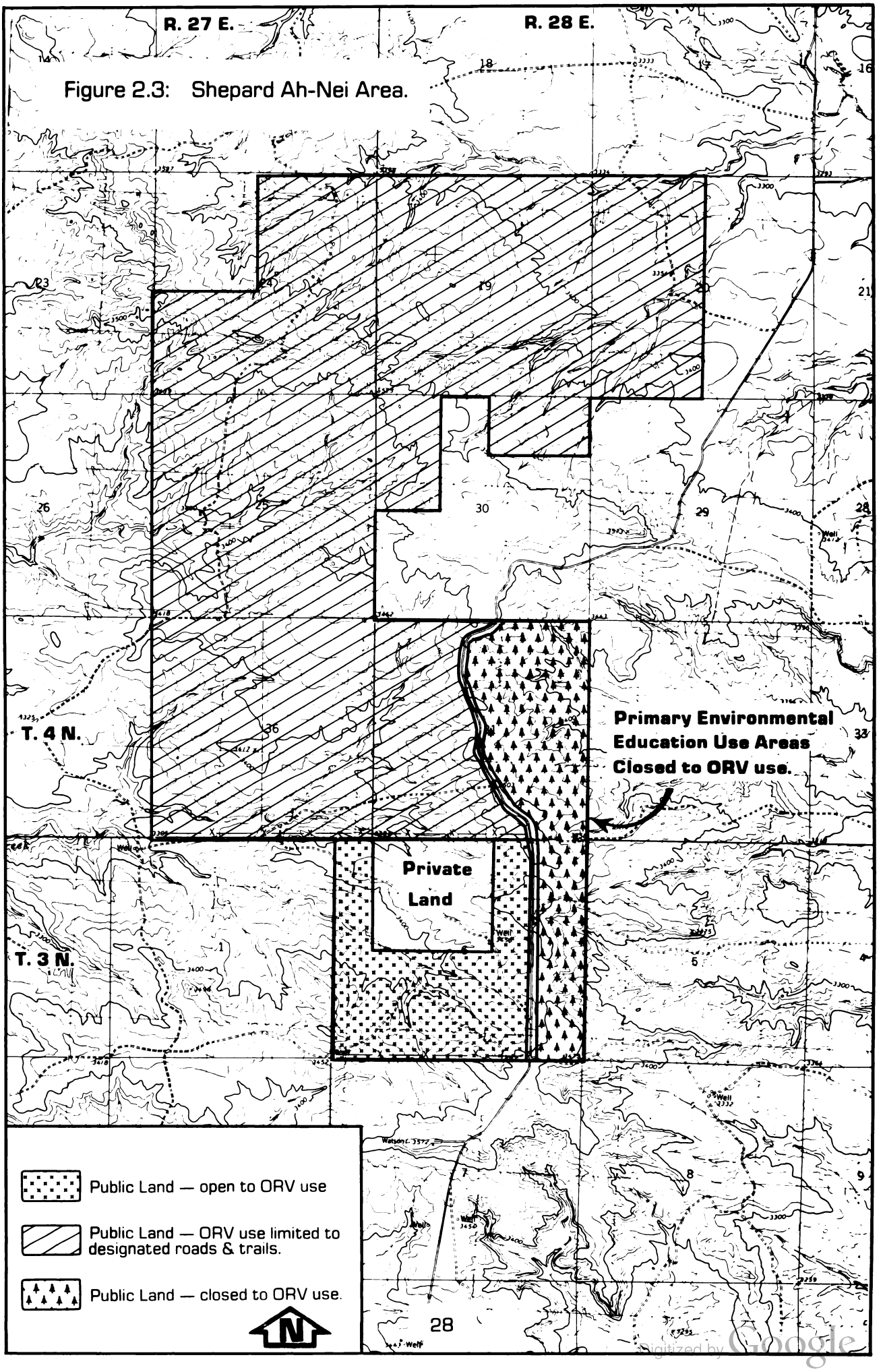

Figure 2.3: Shepard Ah-Nei Area.

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Figure 2.4: South Hills ORV Area.

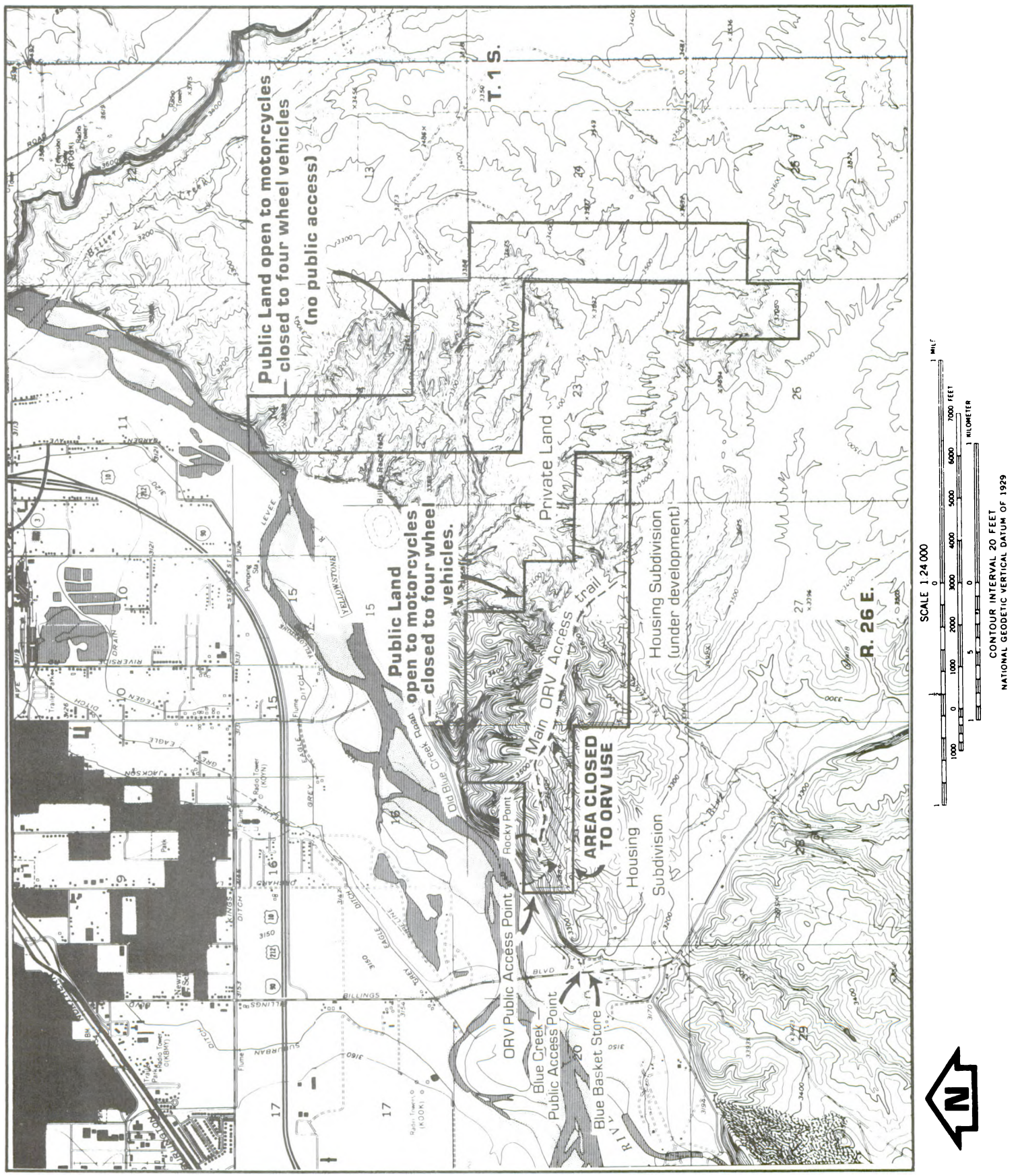

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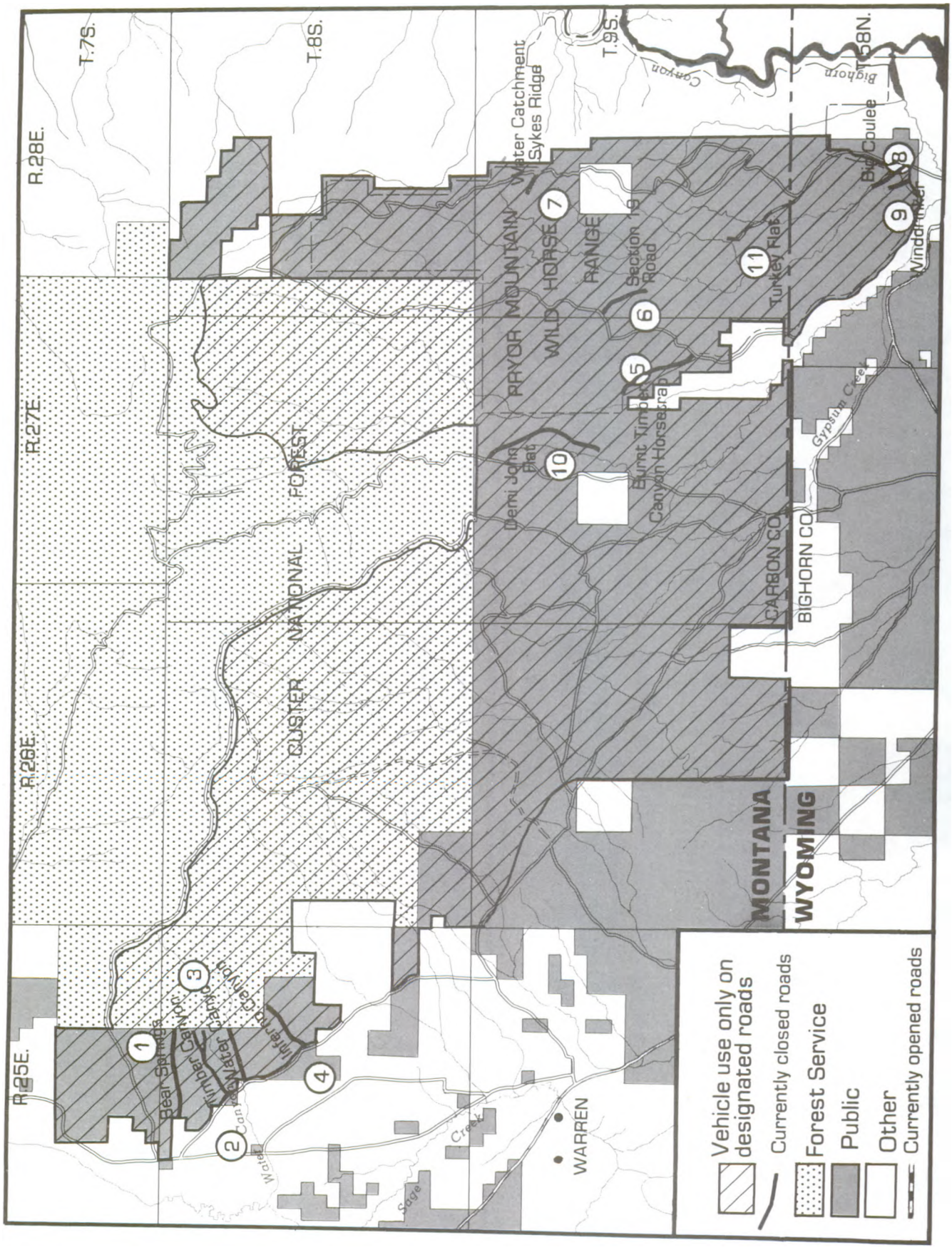
Figure 2.5: Current ORV Designation.



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Wilderness

Resource Objectives and Recommendations

This proposed plan recommends that the 6,870 acre Twin Coulee Wilderness Study Area (WSA) be recommended nonsuitable for wilderness designation. The entire Pryor Mountain WSA consisting of 16,927 acres and a portion of the Burnt Timber Canyon Unit containing 3,430 acres would be recommended suitable. A 525 acre parcel in the southeastern portion of the Burnt Timber Canyon Unit would be recommended nonsuitable. The southern portion of the Big Horn Tack-On Unit containing 2,550 acres would also be recommended suitable, while the northern portion of this unit consisting of 2,000 acres would be recommended nonsuitable. (See Table 2.4 and Figures 2.6, 2.7, 2.8 and 2.9.)

If Congress selects this proposal, multiple use management on 9,395 acres in the Twin Coulee, Big Horn Tack-On and a small portion of the Burnt Timber Canyon Unit would become the resource objective for these areas.

In the Pryor Mountain WSA and portions of the Burnt Timber Canyon and Big Horn Tack-On Units, the objective would be to manage the areas to preserve their wilderness values while allowing other resource uses only where such usage would not cause damage to, or loss of wilderness values.

Rationale

The commercial timber values in the Twin Coulee WSA outweigh the marginal wilderness values. In addition, the majority of the area is heavily timbered and the primary recreational use areas are confined to a few open ridge tops and canyon areas. The adjacent National Forest lands are not being recommended for wilderness designation and the relatively small size of the areas likely to be used by recreationists would offer marginal wilderness opportunities.

The Pryor Mountain WSA contains some of the most rugged isolated portions of the Pryor Mountain range. The wide expanses and topographic screening provided in this area offer outstanding wilderness values. This area is in the heart of the PMWHR and the supplemental attributes of free roaming wild horse herds enhances the wilderness characteristics found in the area. There are no overriding resource conflicts in the area such as mineral values or domestic livestock grazing which would compromise a wilderness recommendation. This is also true of the Big Horn Tack-On and Burnt Timber Canyon Units.

The Burnt Timber Canyon Unit is a physiographic extension of the U.S. Forest Service Lost Water Canyon wilderness study area which has been recommended for wilderness designation. The deeply incised canyon, limestone caves and overhangs and other natural attributes as described in Chapter 3 of this document provide exceptional wilderness values. The boundary modification eliminating 525 acres from the recommended area is located in Sections 23 and 24 of T. 9 S., R. 27 E. This area has been impacted by uranium prospecting and there are a number of open pits and areas where a dozer or backhoe has been used to access test pits. The northwestern portion of the excluded area also contains a large wild horse trap.

The southern portion of the Big Horn Tack-On Wilderness Study Unit (WSU) provides a 9 mile common boundary with the NPS Bighorn Canyon wilderness study area. This contiguity in association with the BLM Pryor Mountain WSA is important to the potential wilderness management of the general area and the total area provides outstanding wilderness opportunities.

The northern portion of the Big Horn Tack-On WSU is somewhat isolated from the other Pryor Mountain proposed wilderness areas by state and private lands. The nonpublic lands are currently experiencing heavy motorized recreational use during the spring, summer and fall months.

This portion of the study area has approximately ½ mile of common boundary with the NPS Bighorn Canyon WSA. A large portion of this area consists of a steep mountain face accessible from and within view of the U.S. Forest Service Dryhead Overlook. Because of the boundary configuration and adjacent land uses, this area would not contribute positively to the overall wilderness management of the remainder of the Pryor Mountain study units.

TABLE 2.4: WILDERNESS SUITABILITY RECOMMENDATIONS

Study Area	Acreage Recommended Suitable	Acreage Recommended Non-Suitable
Twin Coulee WSA MT-067-212		6,870 acres
Pryor Mountain WSA MT-067-206	16,927 acres	
Burnt Timber Canyon WSU MT-067-205	3,430 acres	525 acres
Big Horn Tack-on WSU MT-067-207	2,550 acres	2,000 acres

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Figure 2.6: Alternative Map — Twin Coulee Wilderness Study Area.

Wilderness Study Area

boundary same for all alternatives

PROPOSED ACTION

NO WILDERNESS

TWIN COULEE

MT-067-212

N

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SCALE IN MILES

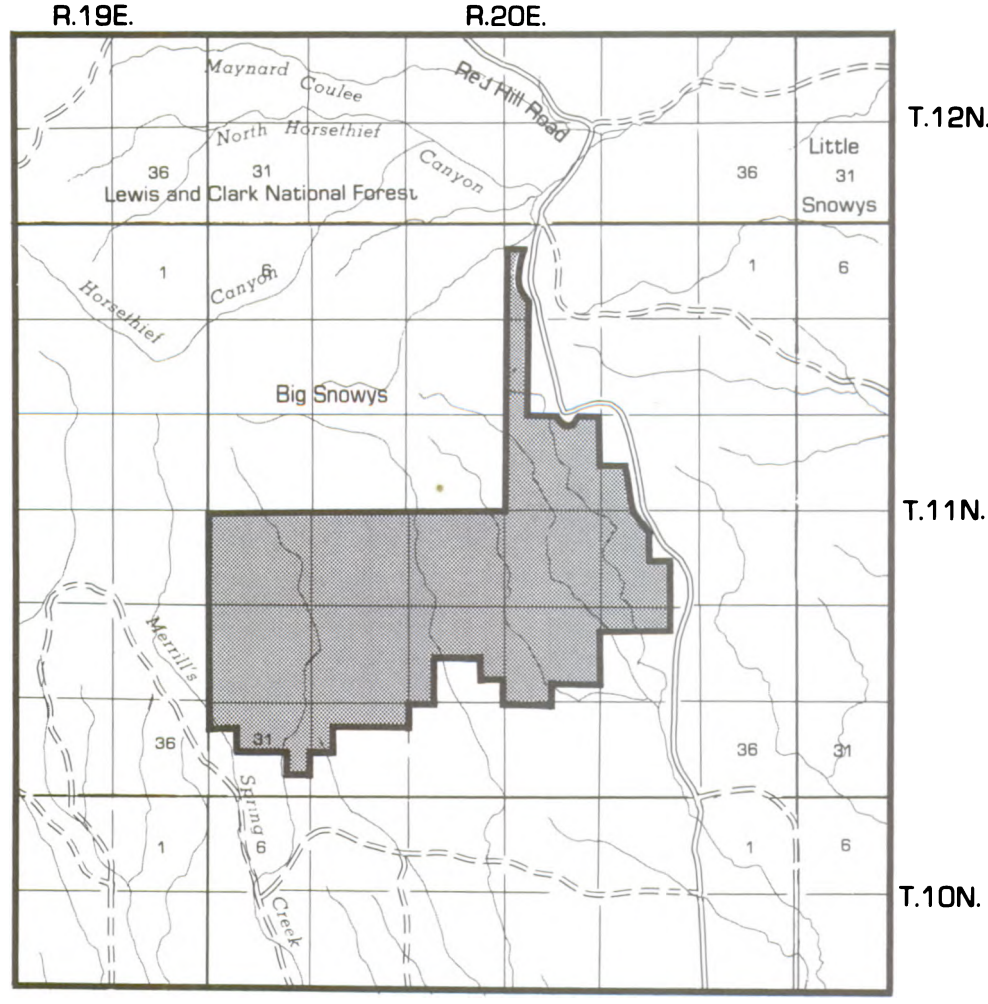

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Figure 2.7: Alternative Map — Pryor Mountain

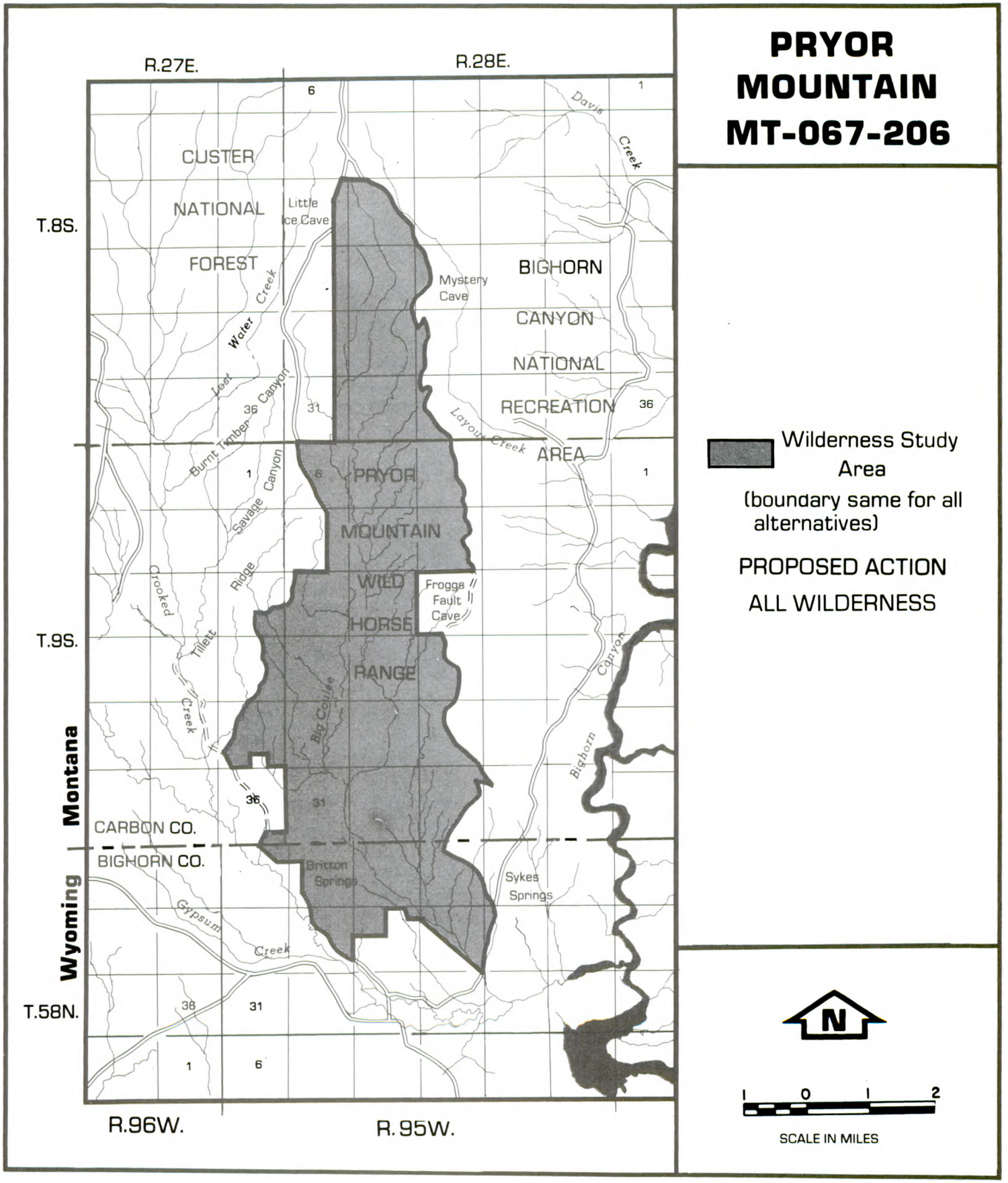

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Figure 2.8: Alternative Map — Burnt Timber Canyon.

Wilderness Study Unit
(boundary same for all alternatives except proposed action)

PROPOSED ACTION
PARTIAL WILDERNESS

BURNT TIMBER CANYON

MT-067-205

N

1 0 1 2

SCALE IN MILES

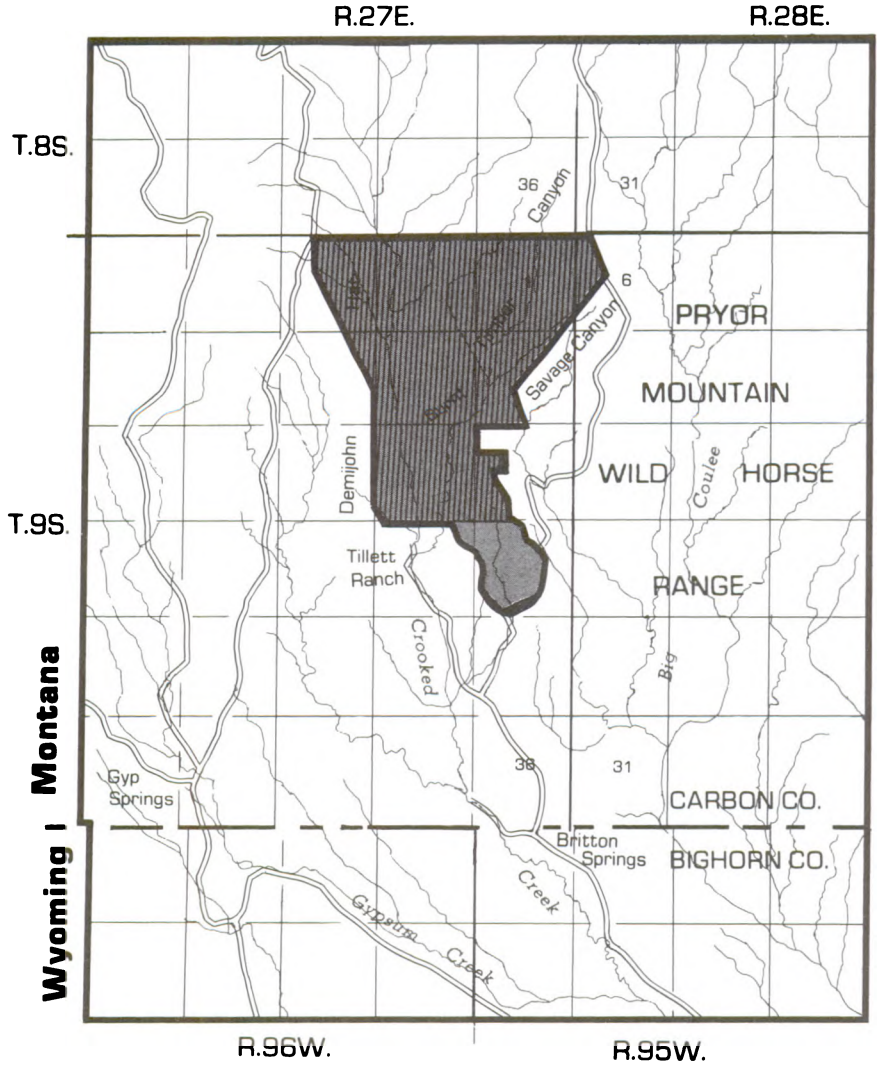

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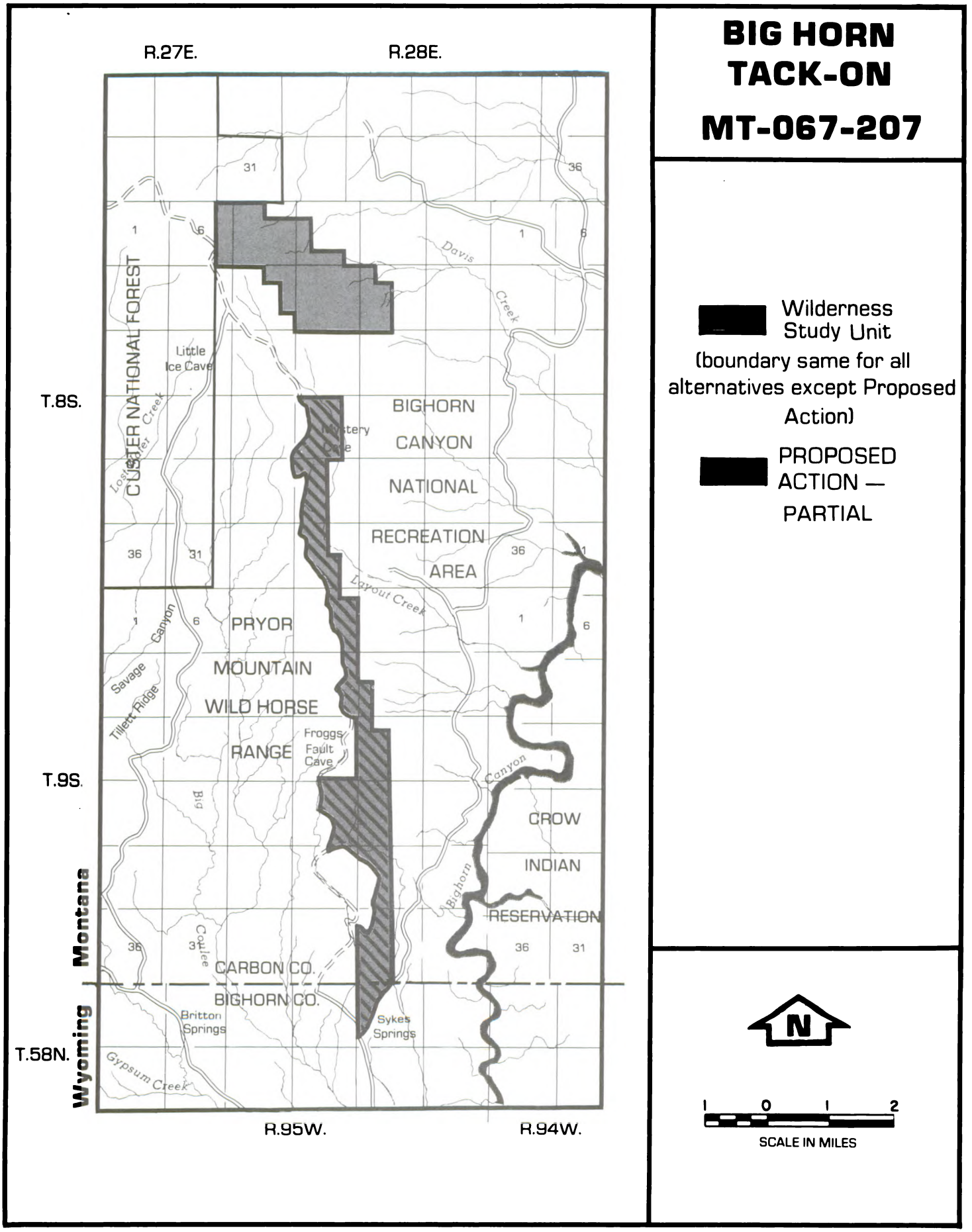
Figure 2.9: Alternative Map — Big Horn Tack-On.



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CONTINUATION OF EXISTING MANAGEMENT ALTERNATIVE

This alternative would maintain present management direction to resolve issues, while responding to the requirements of new regulations and changing policies. This is to be considered a no action alternative. Resource development and other activities would remain static.

Grazing Management

Resource Objectives and Recommondations

The resource condition objectives of this alternative are: (1) to the extent possible with grazing management systems alone, improve poor condition ranges in the "I" allotments to fair condition and fair condition range to good condition in 25 years; (2) to maintain the current satisfactory conditions on the "M" (Maintain) category allotments; and (3) to manage the "C" (Custodial) allotments custodially.

The livestock production objective is to maintain the current proper use AUM allocations in the short term, while increasing available forage in the long term by improving range conditions through grazing management. Where current allocations exceed proper use, the objective is to determine the proper use level, through monitoring, and allocate livestock forage accordingly.

Table 2.1 shows management objectives for each "I" allotment.

Two constraints limit achievement of these objectives: (1) no vegetative manipulation practices would be done, as has been current practice; and (2) leafy spurge control would continue to be done on only one allotment.

Proposed Allocation

In this alternative, 62,437 AUM authorizations to 333 operators would continue in the short term. Intensive monitoring of actual livestock use and forage utilization would be conducted on the Dryhead and Upper Sage Creek allotments to determine proper stocking levels. Less intensive monitoring of stocking levels would be done on the remaining "I" and the "M" and "C" allotments. Any reductions in livestock use would be phased in over a 5 year period according to BLM grazing regulations. In the long term, it's assumed that increased forage, available under proper use, would be allocated to livestock. This increase is estimated to be 3,120 AUMs.

Grazing Treatments and Systems

Sixteen new AMPs would be developed on "I" category allotments and six existing AMPs in the "I" category would be revised. Allotment-specific objectives would be developed to resolve resource conflicts and improve resource conditions on these "I" allotments to the extent possible, with grazing systems alone. Grazing systems incorporating rest and deferment treatments would be designed to achieve these objectives. A total of 87,679 acres, of which 43,114 are in fair and poor range condition, would have improved grazing systems. The current grazing systems in 16 "M" and 2 "C" category existing AMPs would be continued.

Proposed Range Improvements

In order to develop grazing systems on the "I" category allotments, 4 reservoirs, 8 wells, 21 miles of stockwater pipelines, 19 water catchments and 13 miles of fence would be proposed. The total cost of these improvements is estimated at $306,000.

No vegetative manipulation is proposed, except for the continuation of leafy spurge control on 45 acres with Tordon (picloram) herbicides in the Paradise (#4111) allotment. The cost of this weed control program is $3,000 per year. The total cost of weed control during the 8 year implementation period is estimated at $15,000 based on a gradual decreases in the amount of spraying needed. Labor and equipment costs are not included since summer fire crews would be used.

The total cost of improvements in this alternative is $321,000. Part of these costs would be borne by the livestock operators. Current range improvement funds available through grazing fee receipts returned to the Billings Resource Area total $60,000 annually. These improvements would be accomplished in 8 years assuming a continuation of current range improvement funding levels and rancher cooperation. See Appendix 2.1 for average costs of the various improvements.

Monitoring

Monitoring would vary with management category as shown on Table 2.2. Permanent trend studies are located in 67 allotments. These sites should continue to be monitored, with the 22 "I" allotments receiving the greatest emphasis. Actual livestock use and utilization data would be collected on "I" allotments where there is a need to closely monitor the level of livestock use.

Wild Horse Management

The current carrying capacity of the PMWHR is approximately 121 wild horses yearlong (see Appendix 2.9). This is the total number of horses of all ages, including current year's foals, on the range at the beginning of the winter grazing period. Approximately 80% of this total would be horses 2 years old or older. A population at this level, which is nine (9) horses below the present number on the range (130), would maintain the habitat and allow for improvement over the long term.

Resource Objectives and Recommendations

The resource objectives in this alternative are: (1) to maintain areas that currently have satisfactory range condition; (2) to prevent further deterioration of range sites in less than satisfactory condition; and (3) to strive for an upward trend in condition on those range sites in less than satisfactory condition.

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The recommendation for achieving these objectives is to maintain the population of 121 wild horses in the short term. This would require an initial stocking level of 46 on the Tillett Ridge, 44 on the Sykes Ridge and 31 on the Dryhead herd areas. These numbers depend on the continuation of current agreements allowing wild horses to graze areas outside the designated wild horse range boundary. The population of a herd area shall not exceed the current grazing capacity by more than 10% until range, watershed and wildlife habitat conditions are rated good and have stabilized. Should monitoring studies indicate a downward trend in a herd area due to the wild horses, the wild horse population would be reduced below current grazing capacity. During the short term (8 years), the number of wild horses would be maintained at approximately 121 head. Ultimately, the PMWHR has the potential to support approximately 179 wild horses yearlong, assuming all areas now grazed by the wild horses would continue to be available to the horses (see Appendix 2.10). However, the projected long-term (25 years) population increase in this alternative is considerably less than the potential level of 179 head since no rotational grazing systems would be in effect.

The maintenance of a healthy, viable breeding population of wild horses would be achieved through the retention of animals of the required sex and age class and the annual selective removal of excess animals. Maintenance of this number of wild horses would keep a balance with available forage and allow range condition and wildlife habitat to improve to a good condition. Excess wild horses would be made available for private maintenance and care through the Adopt-A-Horse Program.

The current sex ratio, age class structure, color and other genetic traits would be maintained at this level of management.

Proposed Range Improvement

This alternative requires minimal additional man-made improvements or facilities. Five water catchments would be required to improve wild horse grazing distribution. About 2 miles of fence would be needed for improving the efficiency of capturing the horses and 5 miles to complete fencing the southern boundary. The total estimated cost of these improvements is $56,500. This figure does not include an annual excess and removal cost of approximately $21,000 required to gather and excess an average of 30 horses per year in the short term. See Appendix 2.1 for a summary of estimated costs for range improvements.

Monitoring

Monitoring the wild horse herd would involve studies on the herd population, distribution by herd area and population characteristics such as sex ratio, age structure, social structure and animal condition.

Habitat studies would focus on utilization, condition and trend, and vegetation cover. These studies would be conducted on key range sites in each herd area and would be the basis for adjusting population levels in each herd area.

Wildlife Management

The Federal Land Policy and Management Act of 1976 chartered BLM with the responsibility of maintaining or enhancing fish and wildlife habitats that occur on the public lands.

Resource Objectives and Recommendations

The Billings Resource Area operates under a number of general wildlife habitat management objectives which are utilized Bureau-wide. Each objective is mandated and/or supported by specific Federal regulation or legislation. These wildlife program objectives are common to each alternative level discussed in this RMP/EIS. The BLM wildlife habitat management program places special emphasis on, but is not limited to the protection, maintenance and enhancement of:

— Crucial habitats for big game, upland game birds and waterfowl.

— Crucial habitats for nongame species of special interest and concern to state or other Federal agencies.

— Wetland and riparian habitats.

— Existing or potential fisheries habitat.

— Habitat for state or Federally listed threatened and/or endangered species.

These commitments to the wildlife resources vary by alternative only in the level of effort devoted to each element within the program. The level of effort undertaken annually is dependent upon national priorities, Washington Office direction and the availability of funding and manpower to effectively complete the workload.

The level and intensity of wildlife habitat management activities presented in this alternative have been selected based on feasibility, opportunity, need and associated impacts to other resource programs.

Wildlife Improvements

In the short term, 12 upland game bird watering devices would be installed, 20 waterfowl nesting islands would be constructed, 7 reservoirs would be fenced for waterfowl production, 2 riparian zones would be fenced and reservoirs would be stocked with fish if they are determined suitable.

The maintenance of existing facilities would receive priority over construction of any proposed additional facilities.

Monitoring

To achieve this annual objective, the program would focus on completing 50,000 acres of terrestrial habitat monitoring, surveying 7 waterfowl concentration areas, monitoring 300 acres of known prairie dog colonies for the presence of black-footed ferrets and surveying approximately 5 miles of streams with active fisheries and 2 reservoirs with fisheries potential.

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Coordination

All major wildlife habitat enhancement projects would be coordinated with regional personnel of the MDFWP. As mandated in a joint memorandum of understanding with the MDFWP, all projects involving vegetative manipulation would be presented to the regional personnel for comments and recommendations in advance of project initiation.

Informal and formal consultation with USFWS would be initiated on all proposed actions in which BLM determines a may affect situation exists for any Federally listed threatened or endangered species. Consultation would be done in accordance with Section 7 of the Endangered Species Act, as amended.

An interagency team of wildlife biologists has been established to review and make final recommendations on the application of the Federal coal program wildlife unsuitability criteria for the Bull Mountain area. This effort would be accomplished in consultation with USFWS and the MDFWP.

Implementation Costs

It's estimated that the total cost of improvements to implement this alternative is $42,100 (see Appendix 2.2).

Timber Management

The resource area has conducted small timber sales in the past, primarily along the Beartooth Front (southeast of Big Timber). Two other sales have taken place in the Bull Mountains. Productive forest lands in the Billings Resource Area total 14,225 acres. Outside the "protected areas", productive forest lands total 9,013 acres. There are 14,457 acres managed as protection areas in the Twin Coulee (Snowy Mountain area) and PMWHR of which 5,210 acres are productive forest lands.

Resource Objectives and Recommendations

To meet local demand and salvage fire damaged or bug-killed trees, small timber sales would continue. The yearly cut should average 45 MBF, over about 20 acres, which is the approximate average cut in the resource area in recent years. The 14,457 acres described above would continue to be managed in the protection category. In these areas, timber may only be harvested for the benefit of some other resource value or concern such as safety, watershed or wildlife.

Coal

There are several coal fields in Stillwater, Carbon and Musselshell Counties. The only coal mined in the resource area is from the Bull Mountain Field where two surface mines are currently operating. The coal is used mainly for domestic purposes and light industry. One mine produces about 10,000 tons per year of privately-owned coal. The second mine is operating under a Federal lease, producing about 10,000 tons per year which disturbs about 1½ acres annually. Both mines serve a large part of southern Montana.

Industry has a history of interest in Federal coal from the Bull Mountain and Joliet/Fromberg fields for potential underground and surface mining.

Resource Objectives and Recommendations

Since the lessee (Divide Coal Company) is about to exhaust its coal reserves, new leases or additional acreage to the existing Federal lease would be required. Over the long term, this could affect 37½ acres. To satisfy the current demand, the present production level would be maintained by issuing emergency leases.

Oil and Gas Leasing

Most of the Federally managed oil and gas estate is already under lease. The largest block of unleased acreage is in the Pryor Mountain Area, where until recently, industry interest has been low. One 360 acre lease has been issued in the Wyoming portion of the PMWHR. Current management (the Big Horn Planning Unit Management Framework Plan) allows for leasing with no surface occupancy. Lease applications have been received for an additional 1,800 acres in this portion of the range, as well as for the entire Twin Coulee WSA. On the average, the Billings Resource Area receives 10 applications for permit to drill (APDs) annually. Each site location disturbs approximately 2 acres. This level of development is anticipated for all alternatives.

Resource Objectives and Recommendations

The BLM would continue to recommend leasing of Federal minerals within the resource area with the appropriate stipulations to protect other resource values. Lease parcels covering sensitive areas would be routed to the resource area for attachment of special stipulations. Nonsensitive lands would be leased directly from the Montana State Office with only standard stipulations attached.

Land Tenure Adjustment

A scattered land pattern exists within the Billings Resource Area with the exception of the Pryor Mountain area and the Bridger, Warren, Belfry Triangle Area (see Map 1—Map Pocket). In the past, the resource area has not pursued consolidation or disposition of scattered isolated tracts. Within the last 10 years there has been one sale (40 acres) and two exchanges (1,388 acres) in the resource area.

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Resource Objectives and Recommendations

The resource objective is to continue to adjust the land pattern at the current level. If this trend were to continue the resource area anticipates one sale (40 acres) and two exchanges in the short term and two to three sales (100 acres) and four to five exchanges (3,470 acres) in the long term.

Lands to be considered for disposal are those identified for disposal in the Land Tenure Adjustment Area. Land disposal proposals for any other lands within the resource area must meet the disposal criteria defined in the State Director Guidance Land Pattern Review Criteria (see Appendix 1.6). These criteria would be applied on a case-by-case basis to any proposed lands or minerals disposal actions that develop during implementation of this resource management plan.

Classifications

Under the Classification and Multiple Use Act of 1964 (see Glossary), three areas were classified for retention (see Figure 1.2). They were also segregated from appropriation under the agricultural land laws, from sales under Section 2455 of the Revised Statutes, and from the operation of the mining laws, but not from mineral leasing laws.

Resource Objectives and Recommendations

Under this alternative, these classifications would be reviewed, by the end of fiscal year 1983, to determine if they are still serving their original purpose. These classifications would be reviewed in accordance with Organic Act Directive No. 81-11 (see Appendix 1.7). Reviewing these classifications could result in lifting the segregative effect on approximately 28,586 acres.

Recreation Access

Most large tracts of public land within the resource area have legal access provided by either a county, state or a BLM-administered road. Those public lands near Billings with access are heavily used.

Resource Objectives and Recommendations

Recreational demand on public land would be satisfied through existing, legally accessible roads and trails. No effort would be made to acquire additional access for recreation purposes.

Off-Road Vehicle Use

There is presently a demand for ORV use on public lands in the resource area. Much of this activity is concentrated near Billings.

Resource Objectives and Recommendations

The BLM would resolve the conflict between ORV users and adjacent landowners by permanently closing a 70 acre tract in the South Hills (see Figure 2.4). Approximately 1,200 acres in the South Hills would remain open to ORV use. To protect the fragile soil and vegetation in the Pryor Mountain area, 52,000 acres would be closed except for designated open roads and authorized use (see Figure 2.5). The 3,800 acres in the Acton area would be protected by limiting ORV use to existing roads/trails and authorized use (see Map 1—Map Pocket). The remainder of the public lands in the resource area would remain open to unrestricted use by ORVs.

Environmental Education

Since 1974, BLM has provided 77 acres of public lands north of Shepherd to the Billings city and rural schools for environmental education. This led to the development of trails, interpretive signs and parking areas.

There is also another area located approximately 13 miles northwest of Billings near the community of Acton which is available for environmental education purposes if the Shepherd site is overused. A good quality BLM road accesses the area. However, there are no developments for environmental education in the area.

Resource Objectives and Recommendations

The Shepherd Ah-Nei area would be maintained as an environmental education site for use by local school districts as long as there is a need for it. Other activities, such as hunting, would be discouraged during periods of peak use.

Wild Horse Interpretation

The general public has shown interest in the PMWHR and management of the wild horses. Five signs (three on BLM-administered lands and two on the Bighorn Canyon National Recreation Area) indicate the boundary of the horse range. A film shown by Park Service personnel at the NPS Visitor Center in Lovell, Wyoming is the only interpretation of wild horses and the PMWHR available for use by the general public.

Resource Objectives and Recommendations

The BLM would continue to inform the public about the boundaries of the PMWHR by maintaining the five road signs described above. The BLM would also encourage and assist the NPS in providing general information about the Pryor Mountain wild horses.

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Wilderness

There are no designated wilderness areas in the Billings Resource Area. Four areas containing 32,302 acres have been identified as having wilderness values (see Alternative Figures 2.6, 2.7, 2.8 and 2.9). They are: the Twin Coulee WSA—MT-067-212, containing 6,870 acres; the Pryor Mountain WSA—MT-067-206, containing 16,927 acres; the Burnt Timber Canyon WSU—MT-067-205, containing 3,955 acres, and the Big Horn Tack-On WSU—MT-067-207, containing 4,550 acres.

Reeource Objectives and Recommendations

Under this alternative, none of the areas would be recommended for wilderness designation. The objective of this alternative for wilderness would be the continuation of present management in the four study areas and units while continuing present resource use and management direction. This alternative proposes the continuation of present levels of resource use and management and represents the most likely condition to exist in the future if current uses, without regard to the Interim Management Policy for lands under wilderness review, were to continue.

The Twin Coulee WSA is presently managed primarily to retain its natural character. The majority of the area is not suitable for livestock grazing and presently has no mineral development or timber harvesting, although the area does have potential for these two activities.

The Pryor Mountain WSA and the Burnt Timber Canyon and Big Horn Tack-On WSUs are within the PMWHR. The area presently has restrictions on mineral leasing, with no surface occupancy allowed. The area is closed to domestic livestock grazing. There are several mining claims for uranium, but there is presently no mining occurring. Further mineral entry is precluded in this area because of the C&MU Act classifications. These areas contain some commercial timber that is not being harvested.

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LOW LEVEL MANAGEMENT ALTERNATIVE

The Low Level Management Alternative refers to a lower level of BLM management and involvement than in the Continuation of Existing or High Level Management Alternatives. Depending on the specific issue, this alternative would mean fewer restrictions on development or a lesser degree of protection and enhancement of resource values. This alternative would result in greater resource exploitation and development.

Grazing Management

Resource Objectives and Recommendations

The resource condition objectives for this alternative are: (1) for the "I" allotments, stabilize or improve range condition by reducing the level of livestock use. The general objective is to manage the rangelands with the least possible costs in personnel and range improvements; (2) to maintain the current satisfactory conditions on "M" allotments; and (3) to manage the "C" allotments custodially.

Adjustments in the amount or seasonal use of livestock grazing are the means considered for meeting the objectives in this alternative. Based upon the 1981 inventory of range conditions and Soil Conservation Service guides for these range sites, this may require a short-term reduction in livestock grazing within the "I" allotments by an average of 20% or 2,621 AUMs.

Proposed Allocation

Any reductions would be accomplished after monitoring confirms the estimated grazing capacity and would be implemented over a maximum of 5 years and in accordance with guidelines set forth in the grazing regulations (43 CFR 4110.3-2). The "M" and "C" allotments would continue with 49,217 animal unit months allocated. In the short term, 1,121 AUMs would be recovered from the initial reduction of 2,621 AUMs and would be made available to livestock. In the long term, an additional 2,221 AUMs would be recovered for livestock use. As such, by the end of the long term, only 400 AUMs currently available to livestock would not be recovered and reallocated to this use.

Monitoring would vary with management category as shown earlier in Table 2.2, while Table 2.1 provides the allotment-specific objectives and methods for this alternative.

Grazing Treatments and Systems

No new AMPs would be implemented under this alternative, however, those allotments already operating under implemented AMPs would be maintained.

Proposed Range Improvements

No additional BLM initiated improvements would be installed and the 45 acres of leafy spurge treated annually in the existing situation, would not be treated.

Monitoring

No monitoring of range conditions, trend or utilization would be done in this alternative. Use supervision in the "I" allotments would ensure compliance with the reduced level of use.

Wild Horse Management

This alternative minimizes man's influence over the wild horses.

Resource Objectives and Recommendations

The BLM would allow the wild horse population to be regulated solely by the natural biological processes of the wild horses and their environment. As such, gathering and excessing wild horses would not continue.

The approximately 7,696 acres within the Mystic, Lost Water Canyon, Sorenson area and all other NPS lands and all state lands within the PMWHR would not be available for wild horse grazing. Uncontrolled wild horse populations would not be compatible with other agency and private landowner management objectives.

Proposed Range Improvements

The maintenance of range improvements would be limited to the existing boundary fence, the two water catchments, the pipeline and tank at Layout (Hough) Creek and a tank at Sykes Springs.

Where the designated boundary of the range is not fenced, fences would be required to keep the wild horses within the designated PMWHR. This would require about 5 miles of fence.

The corrals at Britton and Sykes Springs would be removed and salvaged. All horse traps within the range would be removed.

Monitoring

Monitoring studies would include only a low level sampling of wild horse population levels and habitat conditions.

Wildlife Management

The Federal Land Policy and Management Act of 1976 chartered BLM with the responsibility of maintaining or enhancing fish and wildlife habitats that occur on the public lands.

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Resource Objectives and Recommendations

The Billings Resource Area operates under a number of general wildlife habitat management objectives which are utilized Bureau-wide. Each objective is mandated and/or supported by specific Federal regulation or legislation. These wildlife program objectives are common to each alternative level discussed in this RMP/EIS. The BLM wildlife habitat management program places special emphasis on, but is not limited to the protection, maintenance and enhancement of:

— Crucial habitats for big game, upland game birds and waterfowl.

— Crucial habitats for nongame species of special interest and concern to state or other Federal agencies.

— Wetland and riparian habitats.

— Existing or potential fisheries habitat.

— Habitat for state or Federally listed threatened and/or endangered species.

These commitments to the wildlife resources vary by alternative only in the level of effort devoted to each element within the program. The level of effort undertaken annually is dependent upon national priorities, Washington Office direction and the availability of funding and manpower to effectively complete the workload.

The level and intensity of wildlife habitat management activities presented in this alternative have been selected based on feasibility, opportunity, need and associated impacts to other resource programs.

Monitoring

To achieve this objective, 40,000 acres of terrestrial habitat would be monitored annually and all other proposed activities such as reservoir construction, fencing, water catchment installation, vegetative manipulation, spring development, water well construction, mineral development and energy development would be carefully evaluated and mitigated to protect the wildlife resources.

Coordination

All major wildlife habitat enhancement projects would be coordinated with regional personnel of the MDFWP. As mandated in a joint memorandum of understanding with the MDFWP, all projects involving vegetative manipulation would be presented to the regional personnel for comments and recommendations in advance of project initiation.

Informal and formal consultation with USFWS would be initiated on all proposed actions in which BLM determines a may affect situation exists for any Federally listed threatened or endangered species. Consultation would be done in accordance with Section 7 of the Endangered Species Act, as amended.

An interagency team of wildlife biologists has been established to review and make final recommendations on the application of the Federal coal program wildlife unsuitability criteria for the Bull Mountain area. This effort would be accomplished in consultation with USFWS and MDFWP.

Implementation Costs

There are no costs associated with project developments to implement this alternative.

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Timber Management

Resource Objectives and Recommendations

The resource area would make available all forest products upon request. Even though sales of up to 1 MMBF may occur in the Twin Coulee area, the anticipated average cut is 90 thousand board feet per year, on approximately 40 acres. Only a minimal acreage would be protected (217 acres of nonproductive forest lands in the Young's Point, Hamilton's Point, Acton and Shepherd Ah-Nei areas).

Coal

For impact analysis purposes, a projection of possible coal development was prepared in which two mines (one surface, one underground) would be opened within the resource area during the life of the RMP. These scenarios are presented more fully in Appendix 2.3. It is difficult to speculate upon the actual location or size of a mining operation, or the mining method which might be employed. Therefore, the analysis in Chapter 4 will address potential impacts which might occur should all areas found acceptable for further consideration pending further study (9,360 acres) be leased and mined at the level projected below.

In the Bull Mountains, one surface mine (in this scenario) would be opened in the ninth year of the RMP implementation period (1992). During the first year and one-half, only construction of support facilities would occur. Sixty acres would be disturbed. Mining would not begin until 1994, when 150,000 tons of coal would be produced, disturbing 11 acres. The mine would reach full production level in 1995, producing 300,000 tons of coal per year from approximately 21 acres, throughout the life of the mine. Since only 21 acres would be disturbed per year, it would take over 400 years to completely mine out the acres found acceptable for further consideration pending further consideration.

Again, for analysis purposes, a small underground mine would be opened in the Joliet/Fromberg Field in 1985. It would take 2 years to construct the necessary surface facilities, during which up to 60 acres would be disturbed. The mine would have an initial production of 30,000 tons in 1987, and reach a full production level of 150,000 tons per year in 1988. This level would be maintained throughout the life of the mine.

The BLM recognizes that one or more large underground mine could also eventually be developed in the Bull Mountains. The environmental impacts from this type of mining would generally be fewer and less severe than those associated with surface mining, with the possible exception of social and economic disruptions associated with a large population influx. The worst case for these physical environmental impacts would be a possible large scale disruption of the groundwater aquifer caused by the coal seam being mined (if it is in fact an aquifer). Those aquifers above and below the coal seam would probably not be affected unless there is movement between aquifers. There would be some surface subsidence depending on the type of mining used, thickness of the seam mined, depth of mining and roof composition. If such large underground mines were eventually developed, a large number of employees would probably be hired locally, with some population influx into Roundup, Billings, Klein and possibly Musselshell.

As stated in Chapter 1, the Bull Mountain Field is in the Powder River Coal Production Region. Before being offered for lease (except emergency leases), coal in the Bull Mountains would have to go through an Activity Planning phase. The coal in the Joliet-Fromberg (and other) fields in Carbon County lies outside the Powder River Coal Production Region, and may be leased upon application and completion of appropriate environmental assessment.

Resource Objectives and Recommendations

The objective of this alternative is to make available for lease all Federal coal found acceptable for further leasing consideration pending further study. No areas would be deleted because of overriding multiple use concerns. All the lands to come through the screens would be considered for lease as the highest and best use for the resource.

In the Bull Mountains, 9,360 acres of Federal coal containing 114,850,000 tons, would be acceptable for leasing or exchange, pending further study (see Figures 2.1 and 2.2).

All coal to be mined by underground methods is acceptable for further consideration for leasing or exchange. The BLM would not apply coal unsuitability criteria to these areas until a site-specific mine plan is filed, detailing the proposed location of surface facilities.

Coal exchanges would be considered on a case-by-case basis.

Oil and Gas Leasing

Resource Objectives and Recommendations

Restrictions to oil and gas exploration and development would be minimized. All new leases would be issued directly by the Montana State Office with only standard stipulations attached (all lands would be classified as nonsensitive). This affects all of the 649,433 acres of Federal mineral estate in the resource area.

Land Tenure Adjustment

Resource Objectives and Recommendations

For analysis purposes, this alternative would not propose changes in the existing public land pattern within the resource area, including the Land Tenure Adjustment Area. This would result in a decrease in disposal actions since no sales or exchanges would be processed in the short or long term.

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Classifications

Resource Objectives and Recommendations

Under the Classification and Multiple Use Act of 1964, three areas were classified for retention. These classifications would be reviewed and discussed in a separate lands report by the end of fiscal year 1983 (FY-83), to determine if they are still serving their original purpose. These classifications will be reviewed in accordance with Organic Act Directive No. 81-11 (see Appendix 1.7).

The objective of this alternative is to lift the segregative effect on approximately 28,586 acres by revoking the classifications. Surface protection would be provided under the 43 CFR 3809 regulations.

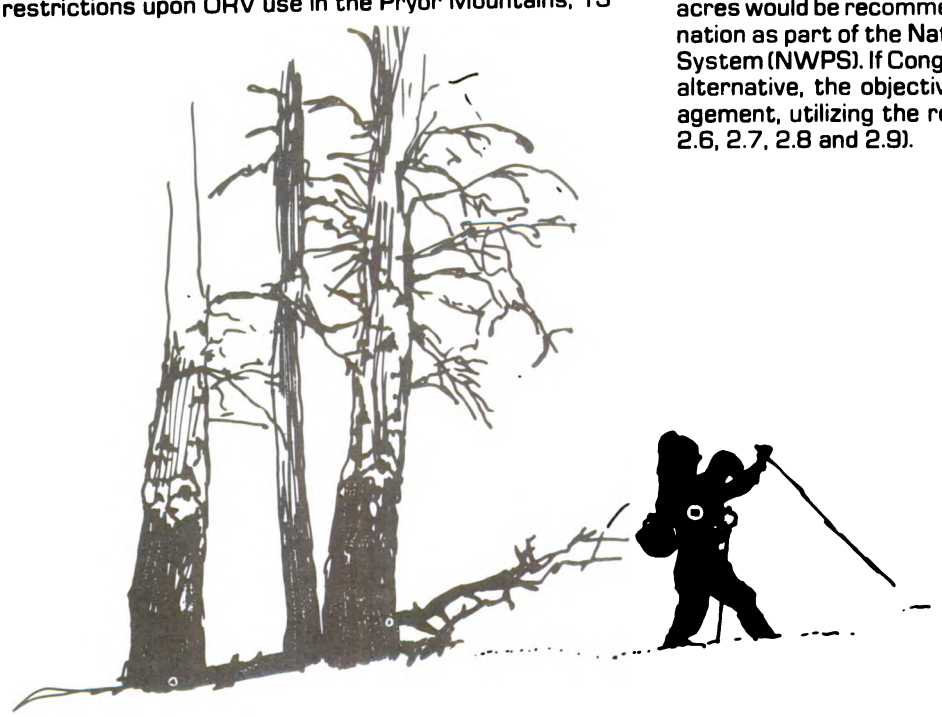
Recreation Access

The BLM would make no effort to acquire additional access for recreational purposes.

Off-Road Vehicle Use

Resource Objectives and Recommendations

The BLM would resolve the conflict between ORV users and adjacent homeowners by permanently closing a 70 acre tract in the South Hills (see Figure 2.4). Approximately 1,200 acres in the South Hills would remain open to ORV use. In order to be more consistent with Custer National Forest policy, four roads/trails on the west flank of Red Pryor Mountain would be opened to ORV use (the Bear Spring Road #1, Timber Canyon #2, Water Canyon #3 and Inferno Canyon #4). To minimize restrictions upon ORV use in the Pryor Mountains, 13 miles of closed roads would be opened to ORV use (Burnt Timber Canyon Trap Road #5; a dead end road off the Burnt Timber Canyon/Tillett; the ridge road in Sections 18 and 19, T. 9 S., R. 28 E., Road #6; Sykes Ridge Water Catchment Road, Road #7; Cottonwood Spring Road along Big Coulee, Road #8; the Winddrinker Site Road #9; and the Demi-John Flat Road #10) (see Figure 2.5). The remaining public land in the resource area would remain open-nonrestrictive.



Environmental Education

Resource Objectives and Recommendations

The Billings Resource Area would permit the use of public lands for environmental education without further development by BLM, and the facilities (signs, staging areas, etc.) would be removed from existing sites. Other multiple-use activities would be permitted in the 77 acre Shepherd Ah-Nei site.

Wild Horse Interpretation

Resource Objectives and Recommendations

The objective of this alternative would be to maintain the existing level of wild horse interpretation through present roadside signing practices.

Wilderness

Resource Objectives and Recommendations

Under this alternative, four areas containing 32,302 acres would be recommended as non-suitable for designation as part of the National Wilderness Preservation System (NWPS). If Congress selects this no wilderness alternative, the objective would be multiple use management, utilizing the resources present (see Figures 2.6, 2.7, 2.8 and 2.9).

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HIGH LEVEL MANAGEMENT ALTERNATIVE

The High Level Management Alternative refers to a higher level of BLM management and involvement than the Continuation of Existing or Low Level Management Alternatives. Depending on the specific issue, high level would mean more restrictions on development and would provide a greater degree of protection and enhancement of resource values.

Grazing Management

Resource Objectives and Recommendations

The resource objective for "I" allotments would be to improve poor and fair range condition to fair and good range condition through implementation of improved grazing management and vegetative manipulation practices. Because of topography, soil limitations and wildlife habitat concerns, it isn't feasible to strive for 100% improvement on all poor and fair condition range. As a general guide, AMPs developed under this alternative would be designed to achieve 80% good condition on key livestock use areas (key areas being defined as drainage bottoms and flatter areas that normally receive at least moderate use and have the capability to respond to grazing treatments or vegetative manipulation practices).

The objective for "M" allotments, where it's economically advantageous to do so, would be to improve range condition and increase forage production through vegetative manipulation and prescribed grazing treatments while maintaining current satisfactory condition on the remaining "M" allotments.

The objective for "C" category allotments would be to continue custodial management.

The livestock production objective would be to maintain current proper use allocations in the short term, while increasing potentially available livestock forage in the "I" allotments and selected "M" allotments. Where current allocations exceed proper use, the objective would be to determine the proper use level through monitoring and allocate livestock forage accordingly.

Table 2.1 shows the recommended methods and treatments for allotments considered in this alternative as well as the management objectives for each "I" allotment.

Proposed Allocation

In this alternative, 62,437 AUM authorizations to 333 operators would continue in the short term. Intensive monitoring of actual livestock use and forage utilization would be conducted on the Dryhead and Upper Sage Creek allotments to determine proper stocking levels. Less intensive monitoring of stocking levels would be done on the remaining "I", "M" and "C" allotments. Any reductions in livestock use would be phased in over a 5 year period, according to BLM grazing regulations.

In the long term, it's assumed that increased forage, available under proper use, would be allocated to livestock. This increase is estimated to be 10,711 AUMs.

Grazing Treatments and Systems

Sixteen new AMPs would be developed on "I" category allotments and six existing AMPs in the "I" category would be revised. Allotment-specific objectives would be developed to resolve resource conflicts and improve resource conditions on these "I" allotments. Grazing systems incorporating rest and deferment treatments would be designed to achieve these objectives. A total of 87,679 acres, of which 43,114 are in fair and poor range condition, would have improved grazing systems. Current grazing systems in 18 "M" category existing AMPs would be continued. Table 2.2 summarizes the proposed management in this alternative.

Proposed Range Improvements

In this alternative, 21,520 acres of dense sagebrush would be burned, 1,700 acres dominated by blue grama and fringed sagewort would be chiseled or disced and 5,118 acres of crested wheatgrass would be hayed or mechanically treated to increase forage production, improve range conditions and reduce erosion.

Structural improvements would include: 16 reservoirs, 10 wells, 2 spring developments, 31 miles of stockwater pipelines, 47 water catchments and 46 miles of fence. Water catchments, although costly, would also benefit some wildlife species. The cost estimates for these improvements are in Appendix 2.1.

A coordinated noxious weed program among BLM, local weed boards and landowners would be pursued in this alternative. The amount of acreage controlled would depend on the amount of cooperation of other landowners and weed control agencies. An accurate inventory of infested acres is needed. Since so many factors are involved that limit a meaningful estimate of acreage sprayed in this alternative, it's assumed for this analysis that only the current control program (45 acres) in the Paradise Allotment would be accomplished in the short term. Cost of this program would be $15,000 as explained in the Continuation of Existing Management Alternative.

The total cost of the improvements in this alternative would be $995,725 (see Appendix 2.1 for summary of current costs for each type of improvement).

Monitoring

Monitoring would vary with management category (see Table 2.2). Permanent trend studies are located in 67 allotments and monitoring would continue, with the 22 "I" allotments receiving the greatest emphasis. Actual livestock use and utilization data would be collected on "I" allotments where there is a need to closely monitor the level of livestock use.

Wild Horse Management

This alternative would involve water development, cross fencing and boundary fencing of herd areas.

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Resource Objectives and Recommendations

The resource objectives of this alternative are: to maintain 2,775 acres that currently are in good range condition; to provide for good range condition on 50-60% of the grazable range sites within 25 years; and to prevent further deterioration of range sites which are in less than satisfactory condition.

The bands of wild horses within a herd area would be encouraged to move from pasture to pasture by control of access to water or by forced movement to achieve desired objectives for vegetation, watershed, wildlife and recreation.

Populations of wild horses within a herd area would be limited to a number of animals that would not exceed the average acceptable utilization by weight, of the key forage species. This would be 55% utilization on bluebunch wheatgrass, Idaho fescue and needleandthread under a deferred or rest rotation grazing system, and 45% under seasonal rotation (a natural rotation based on changes in range readiness because of elevation differences). When the determined average utilization on the key species is reached, the wild horses would be forced to move to another pasture.

The initial population of wild horses would be the same as in the Continuation of Existing Management Alternative. This population figure is the total number of horses on the range at the beginning of the winter grazing season. Approximately 80% of this total will be horses 2 years old or older. During the short term, this level would be maintained in each of the herd areas. The assumption is that range condition and production would gradually improve and that over the long term (25 years) the number of horses would be allowed to increase. It is anticipated the PMWHR may support up to 179 wild horses when in good range condition and under a rest rotation or deferred rotation grazing system.

When it's necessary to reduce the population of a herd area, wild horses would be relocated to other herd areas, if those areas would tolerate the increase. In absence of relocation opportunities, excess wild horses would be processed for adoption or disposed of on the range.

A selective excess program would retain only those wild horses with the conformation, color and breeding (genetic) characteristics of the Pryor Mountain wild horses.

In order to fully implement this alternative, the Bureau of Land Management should acquire all non-Federal holdings now being grazed by the wild horses. This would provide management stability in the future.

Implementation of this alternative would also require altering the current sex ratio so that it's heavy to studs to reduce the foal crop and minimize the need for excessing wild horses.

Proposed Range Improvements

This alternative would require installing approximately 7 or 8 water catchments, 10 to 14 miles of interior cross fences and about 5 miles of exterior boundary fence. The cost of installing these improvements is estimated to be $106,000.

In the short term, the annual excessing of horses would continue, requiring an estimated $21,000 annually to gather and excess an average of 30 horses. In the long term, altering the sex ratio would reduce the foal crop, but some level of annual excessing may still be required. Costs in the long term cannot be estimated because a time estimate of when the sex ratio reversal and its impacts to horse numbers would take effect has not been established.

Monitoring

Wild horse studies would include the population size, distribution by herd area and population characteristics such as sex ratio, age structure, social structure and animal condition.

Habitat studies would focus on range utilization, condition and trend studies and vegetative cover. These studies would be conducted on key range sites in each herd area and would be used as a basis for adjusting the population levels in each herd area.

Wildlife Management

The Federal Land Policy and Management Act of 1976 chartered BLM with the responsibility of maintaining or enhancing fish and wildlife habitats that occur on the public lands.

Resource Objectives and Recommendations

The Billings Resource Area operates under a number of general wildlife habitat management objectives which are utilized Bureau-wide. Each objective is mandated and/or supported by specific Federal regulation or legislation. These wildlife program objectives are common to each alternative level discussed in this RMP/EIS. The BLM wildlife habitat management program places special emphasis on, but is not limited to the protection, maintenance and enhancement of:

— Crucial habitats for big game, upland game birds and waterfowl.

— Crucial habitats for nongame species of special interest and concern to state or other Federal agencies.

— Wetland and riparian habitats.

— Existing or potential fisheries habitat.

— Habitat for state or federally listed threatened and/or endangered species.

These commitments to the wildlife resources vary by alternative only in the level of effort devoted to each element within the program. The level of effort undertaken annually is dependent upon national priorities, Washington Office direction and the availability of funding and manpower to effectively complete the workload.

The level and intensity of wildlife habitat management activities presented in this alternative have been selected based on feasibility, opportunity, need and associated impacts to other resource programs.

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Wildlife Improvements

An intensive project development program would be initiated, for total implementation to be completed by the end of the short-term period. This would entail the installation of 20 upland bird watering devices in areas where high value habitat is not being utilized due to the lack of available watering sources. Fifty waterfowl nesting islands would be constructed in existing reservoirs in Musselshell and Yellowstone Counties. This would provide nesting and production opportunities on approximately 20% of the total existing reservoirs. Seven existing reservoirs would be fenced to achieve desirable aquatic habitat for waterfowl and shore birds where livestock management options are limited. Of the seven, three reservoirs would be fenced completely with alternate watering facilities installed and the upper 1/3 of the other four reservoirs would be fenced including approximately 50 acres of upland habitat for each reservoir. Twenty-five acres of dense nesting cover would be planted at Big Lake to promote waterfowl production in an area not currently utilized. Twenty raptor nest sites would be installed on 10 active prairie dog colonies and selected locations along the Yellowstone River where abundant prey sources are not being utilized to their potential and/or there is a lack of available nesting sites. If suitable sites are located, three fisheries reservoirs would be constructed near urban communities to help meet the growing demand for these wildlife and recreational resources. Through the use of acceptable grazing systems, 80% of the woody floodplain type of vegetation composition, totalling approximately 41 miles within the category "I" allotments, would be maintained or improved to good or excellent range condition. This objective is consistent with the objectives stated in the High Level Management Alternative for grazing management in this EIS.

Maintenance of the existing facilities would receive priority for available funding over the construction of the proposed project developments.

Habitat Management Plans

Efforts would be focused on the development of habitat management plans for chukar partridge, waterfowl and fisheries. These species have been selected due to their uniqueness in the resource area, obvious opportunities for enhancement or public demands for increased availability.

Land Acquisition

A program to identify a limited amount of non-Bureau lands desirable for fish and wildlife habitat would be initiated. Attention would be focused on lands which contain desirable waterfowl nesting areas, big game wintering ranges, high value upland game bird habitat, active and/or potential fisheries habitat and important nongame and threatened and endangered species habitats. Future acquisition of these lands would occur predominantly through land exchanges.

Monitoring

To achieve the wildlife objective, the wildlife program would focus its emphasis on completing 100,000 acres of terrestrial habitat monitoring annually. This level of monitoring would provide a continuing data base of habitat condition in all big game winter concentration areas, upland game bird nesting areas and PMWHR. Attention would also be focused on the 24 implemented AMPs and selected category "I" and "M" allotments where potential conflicts may occur. Surveys would be conducted on 12 selected waterfowl concentration areas to collect utilization and average annual brood numbers. Approximately 500 acres of known prairie dog colonies would be surveyed for the occurrence of black-footed ferrets and mapped to establish average annual expansion data. Approximately 10 miles of streams with active fisheries would be surveyed per year to collect species occurrence and habitat condition data. Five reservoirs with fisheries potential would be surveyed annually to provide suitability data for future stockings.

Coordination

All major wildlife habitat enhancement projects will be coordinated with regional personnel of the MDFWP. As mandated in a joint memorandum of understanding with the MDFWP, all projects involving vegetative manipulation will be presented to the regional personnel for comments and recommendations in advance of project initiation.

Informal and formal consultation with USFWS will be initiated on all proposed actions in which BLM determines a may affect situation exists for any Federally listed threatened or endangered species. Consultation will be done in accordance with Section 7 of the Endangered Species Act, as amended.

An interagency team of wildlife biologists has been established to review and make final recommendations on the application of the Federal coal program wildlife unsuitability criteria for the Bull Mountain area. This effort will be accomplished in consultation with USFWS and MDFWP.

Implementation Costs

It is estimated that the total cost of improvements to implement this alternative is $102,500 (see Appendix 2.2 for a summary of estimated costs for each type of improvement).

Timber Management

Resource Objectives and Recommendations

As in the Continuation of Existing Management Alternative, small sales to meet local demand and to salvage fire damaged or bug-killed timber would be permitted. An annual cut of 45 MBF, over 20 acres would occur. In the short term, 360 MBF on 160 acres would be harvested. In the long term, 1,125 MBF would be harvested on 500 acres. A total of 15,607 acres of forested lands would

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be protected from cutting except to benefit other resource values or concerns such as watershed, safety and wildlife. Of this total, 5,312 acres are productive forest lands. The protection areas include the Twin Coulee and Pryor Mountain WSAs, as well as Bad Canyon, Young's Point, Hamilton's (Asparagus) Point, Acton area and the Shepherd Ah-Nei area.

Coal

The two potential coal mines (150,000 and 300,000 tons) described in the Low Level Management Alternative would be projected for this alternative as well.

Resource Objectives and Recommendations

The 9,360 acres of Federal coal in the Bull Mountains found acceptable for further consideration pending further study would be reduced under this alternative by a more stringent multiple use trade-off analysis. Locally important resource values such as agricultural productivity, groundwater resources, wildlife habitat, recreation, visual resources, social and economic conditions would be given more weight and coal would be deleted where such values are found to have an overriding importance. These considerations would result in somewhat less acreage being found acceptable for further consideration than in the Low Level Management Alternative. (See Figures 2.1 and 2.2.)

All coal to be mined by underground methods is suitable for further consideration for leasing or exchange. The BLM would not apply coal unsuitability criteria to these areas until a site-specific mine plan is filed, detailing the proposed location of surface facilities.

Coal exchanges would be considered on a case-by-case basis.

Oil and Gas Leasing

Resource Objectives and Recommendations

Important resource values would be protected from degradation caused by oil and gas exploration and development. Oil and gas leases would be issued, however, activities would be restricted when they conflict with sensitive resource values or other management objectives.

Known sensitive areas include: PMWHR (which includes one WSA and two WSUs); the Twin Coulee WSA; Steamboat Butte; Castle Butte; Weatherman's Draw; Crooked Creek Natural Area; Bridger Fossil Area; Red Dome; Petroglyph Canyon; Red Valley; Hamilton's (Asparagus) Point; the Bad Canyon area; the Young's Point area; the Shepherd Ah-Nei area; the Acton area; Federal minerals within 2 miles of the Yellowstone River; and public lands along the face of the Beartooth Mountains (see Appendix 2.6 and Map Pocket Overlay). These areas encompass 70,000 acres of Federal surface and/or mineral estate. New areas may be identified as required by changing policy or as increased information becomes available.

Land Tenure Adjustment

Resource Objectives and Recommendations

The resource objective of this proposed action is to adjust the resource area land and/or mineral base using various Bureau authorities (exchanges, sales, Recreation and Public Purpose patents, etc.) in order to improve management of both public and private land.

Public response to the Draft EIS proposal for Land Tenure Adjustment was unanimous in support of the resource area's use of land exchanges to acquire tracts or block up public land with greater public access, recreation, wildlife habitat, or other resource values. The public responses were generally opposed to disposal of public lands by direct sale. Some concern was expressed regarding the effects of land disposal on surrounding landowners and grazing permittees.

The draft RMP/EIS identified 5,237 acres of public land as suitable for disposal within the Land Tenure Adjustment Area. Within the same area, 3,622 acres were identified as suitable for exchange. Following public comments, the resource area staff reevaluated 19 tracts of public land previously identified for disposal. This evaluation reduced the total acreage in the disposal category from 5,237 to 3,837 acres. (See Appendix 2.7.)

In the light of public responses and further clarfication of land tenure policy at the national and state levels, land exchange would be the predominant method of land adjustment and/or disposal. This adjustment in the proposed action makes the 3,837 acres of public land categorized for disposal within the Land Tenure Adjustment Area available for disposal by exchange as well as by sale or other authorized methods of disposal. Public land in the Land Tenure Adjustment Area available for exchange now totals 7,459 acres.

Twenty-six thousand three hundred and fourteen (26,314) acres within the Land Tenure Adjustment Area have been categorized for retention.

Two thousand three hundred and eighty-two acres of public land have been categorized for further study. Lands placed in this category would be later evaluated using the criteria defined in the State Director Guidance for Resource Management Planning in Montana and the Dakotas (Appendix 1.6).

It should be noted that land base adjustment is a tiered process involving two entirely separate and distinct actions—categorization and disposal. Categorization involves the application of certain criteria to a given tract or zone of public land for initial identification of the potential for disposal or retention. This streamlines the land tenure adjustment process by helping the resource area to focus on those lands which initially meet the disposal criteria outlined in the Draft EIS (Appendix 1.3) and in the State Director Guidance (see Appendix 1.6).

Actual disposal by either sale or exchange requires a site-specific analysis prior to the recommendation. The analysis is handled in subsequent activity planning through the Environmental Assessment/Land Report (EA/LR). The EA/LR is an interdisciplinary document

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which examines and evaluates the effect of the proposed action on all affected resource values, which could include vegetation, watershed, wildlife, recreation, aesthetics, air quality, cultural resources, public access and the social and economic impact to adjacent landowners, grazing permittees and the local community.

Section 206(a) of FLPMA requires that land exchanges serve the public interest. This section of FLPMA states that an exchange may occur if "the values and objectives which Federal lands or interests to be conveyed may serve if retained in Federal ownership are not more than the values of the non-Federal lands or interests and the public objectives they could serve if acquired".

Likewise, public lands to be disposed of by sale must meet certain FLPMA requirements. Section 203(a) of FLPMA states that public lands may be sold if:

1. such tract because of its location or other characteristics is difficult and uneconomic to manage as part of the public lands, and is not suitable for management by another Federal department or agency; or
2. such tract was acquired for a specific purpose and the tract is no longer required for that or any other Federal purpose; or
3. disposal of such tract will serve important public objectives, including but not limited to, expansion of communities and economic development, which cannot be achieved prudently or feasibly on land other than public land and which outweigh other public objectives and values, including, but not limited to, recreation and scenic values, which would be served by maintaining such tract in Federal ownership.

In summary, before a proposed exchange or sale of public land can proceed, the EA/LR must show that the proposed action accrues significant benefit to the public.

When EA/LR findings are such that a public land parcel can be disposed of either by exchange or sale, and management concurs, a Notice of Realty Action (NORA) is published once in the Federal Register and at least once a week for three weeks in a newspaper with distribution in the area of the proposed action. The NORA describes the proposed action and specifies a 45 day period for public review and comment. The location of the office where individuals can review the case file is also included. Following the 45 day period, any adverse comments are responded to by the District and/or State Director, who may vacate or modify the proposed action based on the comments received.

In addition to the official publication of the NORA in local papers and the Federal Register, adjacent landowners, Governor, Congressional delegation, county commissioners, and other interested parties are sent a letter of notification with a copy of the NORA attached. If the county commissioners feel it is necessary, a public hearing on the proposed action would also be held.

Several individuals expressed a concern about how the retention and disposal criteria would be applied to the uncategorized lands outside of the Land Tenure Adjustment Area. To address this concern, the resource area staff has delineated the remaining portion of the resource area into retention and disposal zones (see Overlay Map Pocket). Approximately 364,350 acres were delineated in Retention Zones, while approximately 52,500 acres were delineated in Disposal Zones outside of the initial Land Tenure Adjustment Area described in the draft EIS. The lands in the disposal zones include approximately 10,150 acres of public land adjacent to U.S. Forest Service land along the Beartooth Face and in the Twin Coulee WSA that would be proposed for exchange to the U.S. Forest Service. These tracts of public land would thus remain in public ownership. The remaining 42,350 acres of public land in the Disposal Zones would be suitable for disposal by any method, but predominantly through exchange (see Table 2.4).

Existing data and an interdisciplinary analysis were utilized in delineating the boundaries of the zones (retention, disposal, further study). Specific tracts within these zones may be readjusted or recategorized as a result of site specific analysis during the activity planning stage.

Exchanges would also be the predominant method of land disposal for public lands outside of the Land Tenure Adjustment Area. Lands to be acquired by exchange will generally be located within retention areas, while lands to be disposed of by exchange or sale will primarily be located in disposal areas. Based on site-specific application of the land tenure adjustment criteria in the State Director Guidance, some lands within a disposal zone, such as critical wildlife habitat, may be retained, while some lands in a retention zone may be disposed of.

Lands to be acquired should:

1. facilitate access to public land,
2. maintain or enhance important public values and uses,
3. maintain or enhance local social and economic values,
4. facilitate implementation of other aspects of the Billings RMP, including:
   A. acquisition of non-BLM lands within PMWHR,
   B. facilitation of future mineral development, and/or
5. facilitate other criteria addressed in the State Director Guidance.

Classifications

Under the Classification and Multiple Use Act of 1964, three areas were classified for retention. They were also segregated from appropriation under the agricultural land laws, from sales under Section 2455 of the Revised Statutes, and from the operation of the mining laws but not from mineral leasing.

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Resource Objectives and Recommendations

The High Level Management objective is to protect approximately 28,586 acres with sensitive resource values against mineral entry within PMWHR. A protective withdrawal would be sought for the areas now classified under the C&MU Act. This would segregate the area against mineral entry.

Recreation Access

Resource Objectives and Recommendations

The resource area would provide access into areas with high recreation potential, and where the public or state and Federal agencies have identified the need for access.

The BLM would acquire an exclusive easement or right-of-way to the following areas: a large tract of public land on the north side of the Yellowstone River and 7 miles west of Pompeys Pillar (in Sections 6, 7 and 18, T. 3 N., R. 29 E.); an area 6 miles north of Laurel (in Section 14, T. 1 S., R. 23 E.); an area in the Bridger, Belfry, Warren Triangle (in T. 8 S.; T. 9 S, R. 23 E.); Young's Point (in Sections 4, 5, 8 and 9, T. 3 S., R. 22 E.); Bad Canyon (in Sections 4, 5, 7, 8, 9, 10, 13 and 14, T. 4 S., R. 16 E.); and the west end of Red Pryor Mountain (access on the Inferno Canyon, Water Canyon, Timber Canyon and Bear Springs roads). Access would be sought to public lands adjacent to the Yellowstone, Musselshell, Boulder, Stillwater, Clarks Fork and Bighorn Rivers. In addition, tracts consisting of 10 to 100 acres along the Yellowstone River would be acquired by the BLM for floating access near Big Timber, Springtime and Pompeys Pillar, Montana.

Off-Road Vehicle Use

Roeource Objectives and Recommendations

The objective of this alternative is to protect most public lands in the resource area from damage caused by ORV use, and to reduce conflicts between resource users, yet provide areas for their enjoyment. The following measures would be taken:

Off-road vehicle use in the Hamilton's (Asparagus) Point area would be closed except for the main access road and parking area.

An area east of the county road (approximately 460 acres) running through the Shepherd Ah-Nei area would be designated as limited to authorized use. Authorized use would be by permit or license and would be restricted to persons holding grazing leases, to BLM employees for the purpose of resource management and other similar types of authorization. Off-road vehicle use west of the county road (approximately 3,090 acres) would be limited to designated roads and trails and authorized use. The southern portion (about 512 acres) would be open to ORV use.

In the South Hills, the 70 acre area would be permanently closed to all vehicle use and the rest of the area (1,200 acres) would be closed to 4-wheeled vehicles (see Figure 2.4).

The ORV use in northern Musselshell County and the Bridger Triangle Area, encompassing approximately 84,000 acres, would be limited to existing roads, trails and authorized use. All other areas would not be designated unless new conflicts or resource damage occurs.

If legal access is obtained to the area 7 miles west of Pompeys Pillar and Young's Point (see Recreation Access description, this alternative), ORV use may be limited to designated roads or trails. Other restrictions would be the same as described in the Continuation of Existing Management Alternative.

Environmental Education

Resource Objectives and Recommendations

The BLM would provide one or more environmental education sites for use by local school districts, depending on the demand. The three existing facilities at the Shepherd Ah-Nei site would be maintained. The Acton area would be developed should use at the Shepherd site exceed the carrying capacity of 6,000 user days (BLM, 1982), or if the schools express interest in developing this area. Other multiple use activities would be restricted if they conflict with environmental education.

Wild Horse Interpretation

Resource Objectives and Recommsndations

The BLM would construct and maintain six roadside signs around the horse range boundary to provide for continued interpretation of the PMWHR. An interpretive overlook would also be constructed at a cost of approximately $100,000 to provide additional interpretation of wild horses and management of the horse range. Facilities would include an interpretive overlook (20' X 40') located on the periphery of the horse range (1 mile or less from an existing road, but outside the WSA boundaries); approximately 1 mile of hard surfaced road; a 20-vehicle parking area; foot trails; and 2 comfort stations.

Wilderness

Resource Objectives and Recommendations

Under this alternative, four areas containing 32,302 acres would be recommended as suitable for designation as part of the National Wilderness Preservation System (see Figures 2.6, 2.7, 2.8, and 2.9). If Congress selects this "all wilderness" alternative, the resource objective would be to manage these areas for their natural and primitive recreational values allowing other resource use only when that use would not cause any damage to, or loss of, wilderness values.

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TABLE 2.5: SUMMARY DATA FOR FOUR ALTERNATIVES

GRAZING MANAGEMENT

Resource Proposals		Proposed Action		Continuation of Existing Management		Low Level Management		High Level Management	
Type of AMP	Category	No.	Acres	No.	Acres	No.	Acres	No.	Acres
Revised	"I"	6	46,486	6	46,486	6	46,486	6	46,486
Existing	"M"	16	65,590	16	65,590	16	65,590	16	65,590
Existing	"C"	2	42,553	2	42,553	2	42,553	2	42,553
New	"I"	16	41,193	16	41,193	16	41,193	16	41,193
Non-AMP	"M"	140	144,634	140	144,634	140	144,634	140	144,634
Non-AMP	"C"	213	58,932	213	58,932	213	58,932	213	58,932
TOTAL		393	399,388	393	399,388	393	399,388	393	399,388
Unallotted (acres)		5,146		5,146		5,146		5,146	
Livestock Allocations		AUMs		AUMs		AUMs		AUMs	
Initial		62,437		62,437		59,816		62,437	
Long Term		73,148		65,557		62,037		73,148	
Range Improvements		Amounts		Amounts		Amounts		Amounts	
Structural									
Reservoirs (#'s)		16		4		0		16	
Spring Developments (#'s)		2		0		0		2	
Water Catchments (#'s)		47		19		0		47	
Wells (#'s)		10		9		0		10	
Pipelines (miles)		31		21		0		31	
Fences (miles)		46		13		0		46	
Cattle Guards (1)									
Nonstructural									
Mechanical (acres)		6,818		0		0		6,818	
Burning (acres)		21,520		0		0		21,520	
Spraying (acres) (annually)		45		45		0		45	

(1) Cattle guards would be installed when required where fence lines intersect roads; however, the number is not known at this time.

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TABLE 2.5: SUMMARY DATA FOR FOUR ALTERNATIVES (cont.)

WILD HORSE MANAGEMENT

Resource Proposals	Proposed Action	Continuation of Existing Management	Low Level Management	High Level Management
Estimated Horse Population				
Initial	121	121	130	121
Long Term	(3)	121	(2)	179
Structural Improvements				
Fences (miles)	7	7	5	15-19
Water Sources (#'s)	5	5	10	7-8
Horse Traps (#'s)	8	8	0	8
Acquisition of Nonpublic Lands	2,240	0	0	2,240
Acres Under Grazing Treatment	44,296(1)	0	0	44,296 (1)
Acres Available for Wild Horse Grazing	44,296 (1)	44,296 (1)	36,600 (4)	44,296 (1)

(1) Includes all public, state and private lands.

(2) Due to a drastic reduction in ecological range condition, the carrying capacity of the horse range may be reduced to nearly 0; however, interbreeding, poor health and disease may drastically reduce the horse herd even if some forage remains. For this reason, horse population numbers are not estimated.

(3) A slow increase in range condition will occur in the long term, but due to fragile soils, low precipitation and no rest rotation grazing system being utilized, increases in available forage for horses would be minimal.

(4) Includes designated PMWHR only.

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TABLE 2.5: SUMMARY DATA FOR FOUR ALTERNATIVES (cont.)

WILDLIFE MANAGEMENT

Resource Proposals	Proposed Action	Continuation of Existing Managsment	Low Level Management	High Level Management
Surveys & Monitoring Per Year				
Terrestrial Habitat	60,000	50,000	40,000	100,000
(acres)	12	7	0	12
Waterfowl (reservoirs)				
Prairie Dog Towns (acres)	300	300	0	500
Streams (miles)	10	5	0	10
Reservoirs (each)	3	2	0	5
HMPs (#'s)				
Waterfowl	0	0	0	1
Chukar	1	0	0	1
Fish	0	0	0	1
Structural Improvements (#'s)				
Water Catchments	5	12	0	20
Waterfowl Islands	50	20	0	50
Reservoir Fencing	7	7	0	7
Raptor Nests	20	0	0	20
Fish Ponds	3	0	0	3
Riparian Zone Fencing (acres)	0	10	0	0
Nonstructural Improvements				
Woody Floodplain Zone (miles)	41 (1)	0	0	41 (1)
Nesting Cover Planting (acres)	25	0	0	25

(1) Improve or maintain 80% of 41 miles in "I" allotments to good or excellent ecological range condition in the long term.

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TABLE 2.5: SUMMARY DATA FOR FOUR ALTERNATIVES (cont.)

TIMBER MANAGEMENT

Resource Proposals	Proposed Action	Continuation of Existing Management	Low Level Management	High Level Management
Annual Cut (MBF)	70	45	90	45
Protected Areas (acres) (1)	9,500	14,457	217	15,607

(1) Exclusive of wilderness areas. These figures also include productive and non-productive forested areas.

COAL

Resource Proposals	Proposed Action	Continuation of Existing Management	Low Level Management	High Level Management
Annual Production (ton/year)				
Surface Mining				
Short Term	10,000 (1)(3)	10,000	10,000 (1)(3)	10,000 (1)(3)
Long Term	300,000	10,000 (1)	300,000	300,000
Underground Mining				
1984-86	0	0 (2)	0	0
1987	30,000 (3)	0 (2)	30,000 (3)	30,000 (3)
1988-2009	150,000	0 (2)	150,000	150,000

(1) Current production would be maintained under emergency lease procedures.
(2) No underground mining at present.
(3) Assuming surface mining operations will not begin for 12 years; underground mining to begin by 1987.

OIL & GAS LEASING

Resource Proposals	Proposed Action	Continuation of Existing Management	Low Level Management	High Level Management
Acres in No-Lease Category	(2)	0	0	0
Acres Leased With Special Stipulations	70,000	49,870	0	70,000 (1)
Acres Leased With Standard Stipulations	579,443	599,573	649,443	579,443

(1) This area encompasses the Twin Coulee WSA, PMWHR, Beartooth Face, Young's Point, Hamilton's (Asparagus) Point, Bad Canyon, Steamboat Butte, Castle Butte, Weatherman's Draw, Crooked Creek Natural Area, Bridger Fossil Area, Red Dome, Red Valley, Petroglyph Canyon, Shepherd Ah-Nei, Acton area and Federal minerals within 2 miles of the Yellowstone River. New areas will be delineated where application of special stipulations is necessary.

(2) There is a strong probability that some areas will not be leased; acreage cannot be quantified at this time.

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TABLE 2.5: SUMMARY OATA FOR FOUR ALTERNATIVES (cont.)

LAND TENURE ADJUSTMENT

Resource Proposals	Proposed Action	Continuation of Existing Management	Low Level Management	High Level Management
Inside Land Tenure Adjustment Area:				
Acres Found Suitable for Disposal (1)	7,459 (3)	(2)	0	7,459 (3)
Acres Recommended for Retention	26,315	36,156	36,156	26,315
Acres Recommended for Further Study	2,382	0	0	2,382
Outside Land Tenure Adjustment Area:				
Approximate Disposal Acreage	52,500 (3)	0	0	52,500 (3)
Approximate Retention Acreage	364,350	416,850	416,850	364,350

(1) Land exchange will be the predominant method of disposal.
(2) Projected acreage based on acreage sold or exchanged in the last 10 years (1,142 acres short term; 3,570 acres long term).
(3) Includes approximately 10,150 acres suitable for exchange to the U.S. Forest Service.

CLASSIFICATIONS

Resource Proposals	Proposed Action	Continuation of Existing Management	Low Level Management	High Level Management
Acres Segregated from Mineral Entry	980	28,586	0	28,586

RECREATION ACCESS

Resource Proposals	Proposed Action	Continuation of Existing Management	Low Level Management	High Level Management
Number of Sites to be Acquired	7	0	0	10

OFF-RDAD VEHICLE USE

Resource Proposals	Proposed Action	Continuation of Existing Management	Low Level Management	High Level Management
Acres Limited	57,830	55,800	55,800	139,800
Acres Closed	70	70	70	70
Additional Roads Closed (miles)	3	0	0	2
Additional Roads Open (miles)	9	0	13	0

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TABLE 2.5: SUMMARY DATA FOR FOUR ALTERNATIVES (cont.)

ENVIRONMENTAL EDUCATION

Resource Proposals	Proposed Action	Continuation of Existing Management	Low Level Management	High Level Management
Number of Acres	77-0-133 (1)	77	0	133

(1) Assume 77 acres maintained pending no vandalism and 133 acres if visitation exceeds 6,000 visitors/year on 77 acre site.

WILD HORSE INTERPRETATION

Resource Proposals	Proposed Action	Continuation of Existing Management	Low Level Management	High Level Management
Acres Disturbed	0	0	0	10
Number of Signs	6	3	3	6
Miles of Road Constructed	0	0	0	1

WILDERNESS

Resource Proposals	Proposed Action	Continuation of Existing Management	Low Level Management	High Level Management
Suitability Recommendations in Acres by Study Units/Areas				
Twin Coulee				
Suitable	0	0	0	6,870
Nonsuitable	6,870	6,870	6,870	0
Pryor Mountain				
Suitable	16,927	0	0	16,927
Nonsuitable	0	16,927	16,927	0
Burnt Timber Canyon				
Suitable	3,430	0	0	3,955
Nonsuitable	525	3,955	3,955	0
Bighorn Tack-On				
Suitable	2,550	0	0	4,550
Nonsuitable	2,000	4,550	4,550	0
Total				
Suitable	22,907	0	0	32,302
Nonsuitable	9,395	32,302	32,302	0

(1) No Wilderness Alternative.
(2) All Wilderness Alternative.
(3) Partial Wilderness Alternative.

Source: BLM, 1982

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SUMMARY OF ENVIRONMENTAL CONSEQUENCES BY ALTERNATIVE

A comparison of the impacts on major resources is presented in Table 2.6. There would be no significant impacts and no significant difference in impacts between alternatives for climate, topography and geology, and these components are not included in the summary table.

Quantification of resource factors is given when possible. The reference point for determining change is the existing situation. During the years 1984-1991, the selected alternative or combination of alternatives would be implemented. Short-term impacts are those that would occur during this implementation period. Long-term impacts would occur by the year 2009. The following discussion emphasizes the most significant impacts by alternative.

Proposed Land Use Plan

Improvement of ecological range condition on the "I" category allotments would increase significantly in the long term due to improved grazing management and proposed range developments. The acreages in excellent and good range condition would increase by 84% and 88% respectively and range in fair and poor condition would decrease by 71% and 78% respectively. Within the "M" and "C" category allotments, range in good condition would increase by 4% and range in fair and poor condition would decrease by 6%. This would be accomplished primarily from sagebrush burning on 7,400 acres within these allotments. Vegetation allocations to livestock would increase by 17% over the long term.

Without a rest rotation grazing system, current ecological range conditions in the PMWHR in Montana would remain static with a slight upward trend in the long term on the existing 38,213 acres. Range conditions on the remaining 6,083 acres in the PMWHR in Wyoming would remain static. Management cost would increase moderately. These acreage figures include BLM, Forest Service, NPS, state and private lands.

Land tenure adjustment could result in a reduction of approximately 49,809 acres currently under Federal management. Given the new management policy of land exchange as the predominant method of land disposal, this acreage figure would be greatly reduced. In addition, lands acquired by exchange would be more desirable in terms of public resource values and benefits.

Surface disturbances could result in a loss of 3,483 acres of native vegetation in the short term. Grazing management, reseeding and rehabilitation could reduce this figure significantly in the long term.

Spraying with Tordon would decrease leafy spurge on 100 acres in the short term.

The amount of timber harvested would be 560 thousand board feet in the short term and 1,190 thousand board feet in the long term. Areas protected from commercial timber harvest would decrease by 34% leaving 9,500 acres protected.

Wildlife habitat would improve moderately in the short term and significantly in the long term. Additional livestock watering sources would expand wildlife habitat moderately on "I" category allotments. Burning 21,520 acres of sagebrush in small parcels over a large geographic area would slightly decrease chukar and sage grouse habitat in the southern part of the resource area. Burns conducted in the northern part of the resource area in several years time may slightly increase nesting and feeding habitats for sharp-tailed grouse. Chukar partridge habitat would expand by 1,600 acres due to additional wildlife watering sources. Development of reservoirs and nesting islands, fencing of selected reservoirs and the planting of 25 acres of dense nesting cover would significantly expand waterfowl habitat, resulting in an increase of an estimated 350 ducks annually. Nesting cover for upland game birds would increase on an estimated 57,900 acres due to decreased ORV use. Ecological range condition on 80% of 41 miles of woody floodplain zone would improve or be maintained at good and excellent condition. Wildlife harassment and relocation levels would increase moderately through the short and long term. Aquatic habitat would increase significantly due to livestock reservoir and fishery developments. Sedimentation in aquatic habitat would significantly decrease. Competition for wildlife forage and habitat would decrease moderately due to improved grazing management.

Coal reserves (40,000 tons) from the existing surface coal lease in the Bull Mountains would be depleted in 4 years, but emergency leases would continue current production. An anticipated additional surface mine in the Bull Mountains would deplete reserves by 4,350,000 tons in the long term. This represents approximately 3% of the total coal reserves in the area, and is considered insignificant. If additional multiple use considerations are identified they would further reduce the 9,360 acres currently found acceptable for further consideration pending further study. An anticipated underground mine in the Joliet/Fromberg area would deplete reserves by 630,000 tons in the short term and 2,550,000 tons in the long term. Total coal reserve figures for this mine are unavailable at this time.

Oil and gas would be leased with standard stipulations on 579,443 acres and special stipulations on 70,000 acres. There is also a strong probability that some areas would not be leased. Nine hundred and eighty (980) acres would be segregated against locatable mineral entry.

Watershed conditions would improve significantly due to intensive grazing management and an improvement in ecological range conditions. Water quality would decrease in the short term due to waterfowl nesting island construction. In the long term, water quality would increase due to decreases in sediment yield.

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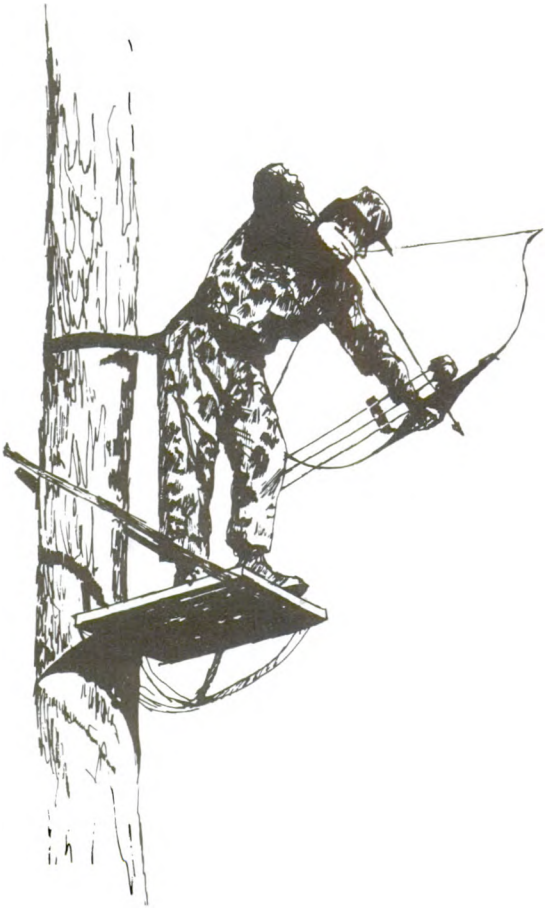

Hunting opportunities would increase significantly because of wildlife habitat improvement and expansion plus additional access to public lands. Fishing and floating opportunities would increase significantly due to increased access to rivers and the development of three additional fish ponds. Physical restriction to cross-country access would increase moderately due to additional fencing and land treatments. Restrictions on ORV use on 57,830 acres would result in a 4% increase from the current level. Seventy-seven acres would remain available for environmental education with an additional 56 acres to be utilized if visitors exceed 6,000 people annually. Environmental education sites would be eliminated if major vandalism begins to occur. Wild horse interpretation would remain at existing levels with the exception of a possible interpretive panel located along the Bad Pass Highway and several roadside signs.

Surface disturbing activities could affect 182 cultural sites. This would be insignificant due to mitigating practices.

Minor adverse impacts to visual resources would occur under this proposed action in the long term, and is considered insignificant.

Wilderness values would be preserved on 22,907 acres. In the long term, multiple use proposals could be permitted on 9,395 acres not recommended for wilderness designation. These actions would be insignificant in terms of wilderness opportunities available in the region.

Animal unit month changes and permit values would be the same as described in the High Level Management Alternative. Social and economic impacts resulting from coal development are also the same as described in the High Level Management Alternative.

Range improvement costs would total $995,725. Noxious weed control would result in a $3,000 annual cost.

Wild horse range improvements would cost $56,500. In the short term, approximately $21,000 in costs would be incurred annually to excess wild horses.

Improvements for the benefit of wildlife would total $75,500.

Continuation of Existing Management Alternative

Improvement of ecological range condition in the "I" category allotments would increase moderately in the long term. The acreages in excellent and good range condition would increase significantly by 84% and 58% respectively, and range in poor and fair condition would decrease by 78% and 44% respectively. These changes would occur during the long term. Ecological range conditions would remain static in the "M" and "C" category allotments. Vegetation allocations to livestock would increase by 4% in the short term and 5% in the long term.

Current ecological range conditions in the PMWHR in Montana would remain static with a slight upward trend in the long term. Range conditions in the PMWHR in Wyoming would remain static. Management cost would increase slightly.

Land Tenure Adjustment could result in a loss of 1,142 acres currently under Federal management in the short term and 3,570 acres in the long term. Overall, the effect on management would be insignificant.

Surface disturbances could result in a loss of 1,076 acres of native vegetation in the short term. Grazing management, reseeding and rehabilitation could reduce this figure substantially in the long term. Therefore, this loss would be insignificant.

Spraying with Tordon would decrease leafy spurge on 100 acres in the short term.

The amount of timber harvested would be 360 thousand board feet in the short term and 765 thousand board feet in the long term. The areas protected from commercial timber harvest would remain at 14,457 acres.

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Wild horse populations on 44,296 acres in the PMWHR would be maintained at 121 head, although carrying capacities could increase slightly. This population figure is the total number of horses on the PMWHR at the beginning of the winter grazing season. Approximately 80% of the horses would be 2 years old or older.

Wildlife habitat for big game, upland game birds and nongame species would improve slightly in the short term and moderately in the long term. Wildlife habitat would expand slightly on "I" category allotments. Chukar partridge habitat would expand by 3,800 acres. The development of reservoirs, nesting islands and fencing of selected reservoirs would significantly expand waterfowl habitat resulting in an estimated increase of 140 ducks annually. The nesting potential for upland game birds would increase on 55,870 acres due to decreased ORV use. The competition of wildlife for forage and habitat would decrease moderately due to improved grazing management. Wildlife harassment and relocation levels would remain moderate primarily due to oil and gas exploration and development, commercial timber harvest and additional range developments. Aquatic habitat would increase moderately due to reservoir construction.

Coal reserves (40,000 tons) from the existing surface coal lease in the Bull Mountains would be depleted in 4 years, but would be an insignificant decrease of the total coal reserves in the Bull Mountains. Current production would be maintained by emergency leasing. This would disturb 12 acres of land in the 8 years of production allowed under an emergency lease.

Oil and gas would be leased with standard stipulations on 599,573 acres, and with special stipulations on 49,870 acres. Currently, there are 28,586 acres in the PMWHR segregated against mineral entry. This segregation would remain the same. The PMWHR may be leased with no surface occupancy under existing management.

Watershed conditions would improve moderately with the exception of 28,585 acres in need of vegetative manipulation. Runoff potential in these areas would remain moderate to severe in the short term. Water quality would increase primarily due to decreases in sediment yield.

Hunting opportunities would increase slightly because of wildlife habitat improvement and expansion. Fishing and floating opportunities would remain the same. Physical restrictions to cross-country access would increase slightly due to fencing. Restrictions on ORV use on 55,870 acres would remain the same. Seventy-seven acres would remain available for environmental education. Wild horse interpretation would remain at current levels.

Surface disturbing activities could affect 24 cultural sites. However, with proper mitigation, these impacts are considered insignificant.

Minor adverse impacts to visual resources would occur under this alternative in the long term, and are considered insignificant.

Currently, there are 32,302 acres under wilderness study. There is a long-term potential loss of wilderness values because of no legislative protection under this alternative, coupled with the potential for timber harvesting. This loss would be insignificant.

Twenty-eight ranches would show increases in income due to a 19% increase in BLM AUMs in the long term. Net annual income for representative livestock categories would range from $187 on small operations to $1,203 on very large operations. Grazing permit values would increase $3,600 for small operations, $9,300 for medium size operations, $12,500 for large operations and $18,800 for the very large operations. These economic factors would be significant to some local operators but would be insignificant on a regional basis.

Structural range improvements would cost $314,000. Weed control would cost $3,000 annually and structural improvements on the PMWHR would total $56,500. The wild horse excessing program would continue to cost approximately $21,000 annually. Structural improvements for the benefit of wildlife management would total $42,100.

Low Level Management Alternative

Improvement of ecological range condition in the "I" category allotments would be minimal. The acreage of range in good condition would increase by 10% and range in fair condition would decrease by 9%. These changes would occur during the long term and are insignificant. Ecological range conditions would remain static in the "M" and "C" category allotments. Vegetation allocations to livestock would decrease by an insignificant amount of 2% in the short term and 0.6% in the long term.

The acres of range in poor condition in the Montana portion of the PMWHR could increase by as much as 293% and range in fair and good condition could decrease by 100% in the long term. Range conditions in the Wyoming portion of PMWHR would decrease in the long term.

Surface disturbances could result in a loss of 1,875 acres of native vegetation. However, this figure could be much less as a result of mitigating practices such as reseeding and rehabilitation, and are insignificant.

The amount of timber harvested would be 720 thousand board feet in the short term and 1,530 thousand board feet in the long term. Areas protected from commercial timber harvest would decrease significantly by 98%, leaving 217 acres in a protection category.

Inbreeding, disease, harsh winters and poor range conditions could reduce wild horse populations drastically under a worst case situation. Management cost of the wild horse program would significantly decrease in the long term. The area available for wild horse grazing would decrease significantly by 7,696 acres.

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Wildlife habitat for big game, upland game birds, waterfowl and nongame species would remain static or may show a very slight improvement, primarily due to vegetation production increases on the "I" category allotments. Wildlife habitat within the PMWHR would severely decline due to increased horse populations and a decrease in range condition. Competition for remaining wildlife forage would significantly increase. Nesting cover for upland game birds would increase slightly on 55,870 acres due to decreased ORV use. Harassment and relocation of wildlife species would increase significantly, primarily due to increased surface disturbing activities such as mining and logging. Aquatic habitat (streambank vegetation) would deteriorate slightly since no new range improvements would be constructed, and sedimentation would moderately increase.

Coal reserves (40,000 tons) from the existing surface coal lease in the Bull Mountains would be depleted in 4 years, however, emergency leasing would continue these operations. An anticipated additional surface mine in the Bull Mountains would deplete reserves by 4,350,000 tons in the long term. This represents approximately 3% of the total coal reserves in the Bull Mountains and is considered insignificant. Nine thousand three hundred and sixty (9,360) acres would be considered under competitive leasing procedures as acceptable for further consideration for coal leasing pending further study to meet the current and projected future demand.

An anticipated underground mine in the Joliet/Fromberg area would deplete coal reserves by 630,000 tons in the short term and 2,550,000 tons in the long term. Total coal reserve figures for this mine are unavailable at this time.

Oil and gas would be leased with standard stipulations on 649,443 acres with no acreage being segregated from locatable mineral entry.

Watershed conditions in the PMWHR would deteriorate moderately in the long term due to a decrease in range condition. Water quality would decrease primarily due to increases in sediment yield.

No significant long term increases in hunting or fishing opportunities would occur, primarily due to lack of wildlife habitat improvement or expansion. River floating would remain the same. Restrictions on ORV use on 55,870 acres would remain the same with the exception of 13 miles of roads being reopened. Existing areas for environmental education would be eliminated. Wild horse interpretation opportunities would remain the same.

Surface disturbing activities could affect 30 cultural sites. These sites would be mitigated and impacts would be insignificant.

Surface disturbances from timber cutting and mineral activities along with reduced wild horse management practices would have significant adverse impacts to visual resources.

This alternative could result in a potential loss of wilderness values on 32,302 acres under a no-wilderness recommendation. This would be insignificant in terms of wilderness opportunities in the region.

Twenty-eight ranches would have a significant decrease in income in the short term due to a loss of 20% of their AUMs with implementation of this alternative. The average decline in net annual income would range from $551 on small operations to $3,408 on very large operations.

By the end of the short term (8 years) the available forage would increase to the point where only an 11% decrease from the original allocations would be in effect. The same 28 ranches would still be affected. These losses range from $305 on small operations to $1,886 on very large operations.

After 25 years, the 28 ranches would show losses of about 3% from their original allocations. These decreases would range from $87 on small operations to $519 on the very large operations.

Initial grazing permit value losses would range from $3,800 on the small ranches to $19,700 on the very large ranches. After 25 years, annual losses would decrease to $600 on the small operations and $3,000 on the very large operations.

No additional operational expenses would be incurred under this alternative since no new project developments for grazing, wildlife or wild horses would be implemented.

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High Level Management Alternative

Improvement of ecological range condition in the "I" category allotments would increase significantly in the long term due to improved grazing management and proposed range developments. The acreages in excellent and good range condition would increase by 84% and 88% respectively and range in fair and poor condition would decrease by 71% and 78% respectively. Within the "M" and "C" category allotments, the range in good condition would increase by 4% and the range in fair and poor condition would decrease by 6%. These increases would be due primarily to sagebrush burning on 7,400 acres within these allotments. Vegetation allocations to livestock would increase by 17% over the long term.

The acreage in good condition on that portion of the PMWHR in Montana would increase significantly by 368% and the range in fair condition would decrease by 448% in the long term. The range in poor condition would remain static in the long term. Range conditions on that portion of the PMWHR in Wyoming would remain static. The long-term carrying capacity on the existing 44,296 acres within the PMWHR would increase significantly by 48% from 121 head of horses to an estimated 179 head.

Land tenure adjustment could result in a reduction of approximately 49,809 acres currently under Federal management. Given the new management policy of land exchange being the predominant method of land disposal, this acreage figure would be greatly reduced. In addition, lands acquired by exchange would be more desirable in terms of public resource values and benefits.

Surface disturbances would result in a loss of 3,242 acres of native vegetation in the short term. Grazing management, reseeding and rehabilitation could reduce this figure significantly in the long term.

Spraying with Tordon would decrease leafy spurge within a 100 acre tract in the short term.

The amount of timber harvested would be 360 thousand board feet in the short term and 765 thousand board feet in the long term. The areas protected from commercial timber harvest would increase by 8% to 15,607 acres.

Inbreeding of wild horses would increase slightly. Development of an interpretation site and rest rotation grazing may increase the harassment of wild horses significantly. Wild horse management costs would increase significantly.

Wildlife habitat would improve moderately in the short term and significantly in the long term. Additional livestock watering sources would expand wildlife habitat moderately on "I" category allotments. The burning of 21,500 acres of sagebrush in small parcels over a large geographic area would slightly decrease chukar partridge and sage grouse habitat in the southern part of the resource area. Burns conducted in the northern part of the resource area in several years time, may slightly increase nesting and feeding habitats for sharp-tailed grouse. Chukar partridge habitat would expand by 6,400 acres as a result of additional wildlife watering sources. The development of reservoirs and nesting islands, fencing selected reservoirs and the planting of 25 acres of dense nesting cover would significantly expand waterfowl habitat resulting in an increase of an estimated 350 ducks annually. Nesting cover for upland birds would increase on an estimated 139,870 acres due to decreased ORV use. Wildlife harassment and relocation levels would increase moderately in the short-term implementation period and be of minor significance in the long term. Aquatic habitat would increase significantly due to livestock reservoir and fishery developments. Sedimentation in aquatic habitat would significantly decrease. Competition for wildlife forage and habitat would decrease moderately due to improved grazing management.

Ecological range condition on 80% of the 41 miles of woody floodplain zone would improve or be maintained at good and excellent condition.

Coal reserves (40,000 tons) from the existing surface coal lease in the Bull Mountains would be depleted in 4 years, however, emergency leasing would continue these operations. An additional surface mine in the Bull Mountains would deplete reserves by 4,350,000 tons in the long term. This represents approximately 3% of the total coal reserves in the area and is considered insignificant. Application of additional multiple use constraints may further reduce the 9,360 acres of Federal coal considered acceptable for further consideration for coal leasing pending further study. An anticipated underground mine in the Joliet/Fromberg area would deplete reserves by 630,000 tons in the short term and 2,550,000 tons in the long term. Total coal reserve figures for this mine are unavailable at this time.

Oil and gas would be leased with standard stipulations on 579,443 acres and with special stipulations on 70,000 acres. There is also a strong probability that some areas would not be leased. Within the PMWHR, 28,586 acres would be segregated against mineral entry.

Watershed conditions would improve significantly due to intensive grazing management and an improvement in ecological range conditions. Water quality would decrease in the short term due to waterfowl nesting island construction. In the long term, overall water quality would increase primarily due to decreases in sediment yield.

Hunting opportunities would increase significantly because of wildlife habitat improvement and expansion plus additional access to public lands.

Fishing and floating opportunities would increase significantly due to increased access to rivers and the development of three additional fishing reservoirs. Physical restriction to cross-country travel would increase moderately due to additional fencing and land treatments. Restrictions on ORV use on 139,870 acres would result in a 150% significant increase from the current level. One hundred and thirty-three acres would become available for environmental education. Development of the Winddrinker Overlook would significantly increase wild horse interpretation opportunities.

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Surface disturbing activities could affect 189 cultural sites. This would be insignificant due to mitigating practices.

Minor insignificant impacts to visual resources would occur under this alternative in the long term.

Wilderness values would be preserved on 32,302 acres. This would be insignificant in terms of wilderness available in the region.

The overall short-term impact on ranch income in this alternative would be minimal. This is because the only identifiable change in AUMs would be the temporary disruption of grazing as mechanical treatments are applied or grazing systems implemented.

In the long term 43 ranches would show an increase in income due to a 38% increase in BLM AUMs. The average change in net annual income for the representative livestock categories ranges from an increase of $380 on small operations to $2,400 on very large operations.

In this alternative permit values would increase $7,300 for the small operations, $18,600 for the medium operations, $25,000 for the large operations and $37,500 for the very large operations in the long term. This represents a 38% increase in permit value for each representative size category.

Population increases resulting from coal development are projected to be less than 1% for Yellowstone, Musselshell and Carbon Counties as well as the communities of Billings, Roundup and Fromberg. These small population increases will not significantly impact social well-being, social organization or community services.

A major adjustment in landownership pattern would mean a loss or redistribution of "Payment in Lieu of Taxes" payments to the counties. There would also be an increase in the local tax base. The magnitude of these changes would be insignificant. Such an adjustment in the landownership pattern would likely result in strong reaction both from those individuals and groups favoring disposal as well as those opposed to the transfer of public lands.

Structural range improvements would cost $995,725 under this alternative. Noxious weed control would result in $3,000 annual costs. Wild horse range improvements would total $106,000 while improvements for the benefit of wildlife totals $102,500.

The costs for a wild horse interpretive facility at the Winddrinker site would exceed $100,000.

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TABLE 2.6: SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Environmental Element	Existing	Proposed Action		Continuation of Existing Management		Low Level Management		High Level Management	
		Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
Vegetation									
Ecological Range Condition (1) acres									
Excellent	3,553	Increasing	6,548	Increasing	6,548	Static	3,553	Increasing	6,548
Good	32,055	Increasing	60,221	Increasing	50,496	Increasing	35,144	Increasing	60,221
Fair	36,161	Decreasing	10,458	Decreasing	20,183	Decreasing	33,072	Decreasing	10,458
Poor	6,953	Decreasing	1,495	Decreasing	1,495	Static	6,953	Decreasing	1,495
Crested Wheat	5,118	Static	5,118	Static	5,118	Static	5,118	Static	5,118
Unsuitable	3,839	Static	3,839	Static	3,839	Static	3,839	Static	3,839
Ecological Range Condition (2) acres									
Excellent	11,054	Static	11,054	Static	11,054	Static	11,054	Static	11,054
Good	106,821	Increasing	111,261	Static	106,821	Static	106,821	Increasing	111,261
Fair & Poor	72,306	Decreasing	67,866	Static	72,306	Static	72,306	Decreasing	67,866
Tame Pasture	7,865	Static	7,865	Static	7,865	Static	7,865	Static	7,865
Unsuitable	3,000	Static	3,000	Static	3,000	Static	3,000	Static	3,000
Unsurveyed	110,663	Static	110,663	Static	110,663	Static	110,663	Static	110,663
Ecological Range Condition (3) acres									
Good	2,775	Maintenance of current		Maintenance of current		Decreasing	0	Increasing	12,996
Fair	12,498	conditions with a slight		conditions with a slight		Decreasing	0	Decreasing	2,277
Poor	7,900	upward trend		upward trend		Increasing	23,173	Static	7,900
Unsuitable	15,040	Static	15,040	Static	15,040	Static	15,040	Static	15,040
Acres in Wyoming - fair/poor (4)	6,083	Static	Static	Static	Static	Decreasing	Decreasing	Static	Static

(1) Acres displayed are "I" category allotments surveyed in 1981 (Ecological Site Inventory).

(2) Acres displayed are "M" and "C" category allotments surveyed in 1981 (Ecological Site Inventory) - changes due to vegetative manipulation only.

(3) Acres displayed are only within the PMWHR in Montana surveyed in 1981 (Ecological Site Inventory).

(4) Acres displayed are only within the PMWHR in Wyoming surveyed in 1971-72 (Ocular Reconnaissance Range Survey).

Miles of Woody Floodplain to Good or Excellent Range Condition		Increasing	41	0	0	0	0	Increasing	41
Timber Harvested - Mbf (thousand board feet)		560	1,190	360	765	720	1,530	360	765
Acres of Timber Protected from Commercial Harvest (does not include wilderness protection)	14,457	9,500	9,500	14,457	14,457	217	217	15,607	15,607
Loss of Native Vegetation Due to Surface Disturbance (acres)		3,483 (1)		1,076 (1)		1,875 (1)		3,242 (1)	

(1) These figures represent total acres disturbed in a 25-year period and do not take into account mitigating practices such as reseeding or rehabilitation.

Loss of Sagebrush Due to Burning (acres) (40-60% kill)		21,520	0	0	0	0	0	21,520	0
Retardation of Leafy Spurge Due to Spraying		100	0	100	0	0	0	100	0
Livestock									
Increased AUMs		0	10,711	2,200	3,120	0	0	0	10,711
Decreased AUMs		0	0	0	0	1,500	400	0	0
Stress		Moderate Increase	Minor Increase	Minor Increase on 16 new "I" allotments	None	No change	No change	Moderate Increase	Minor Increase
Distribution		Improve	Improve	Improve	Improve	No change	No change	Improve	Improve

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SUMMARY OF ENVIRONMENTAL CONSEQUENCES (Continued)

Environmental Element	Existing	Proposed Action		Continuation of Existing Management		Low Level Management		High Level Management	
		Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
Wild Horses									
Horse Populations (1)	130	121	(4)	121	121	130	(2)	121	179
Acres Available for Wild Horse Grazing	44,296	44,296 (3)	44,296 (3)	44,296 (3)	44,296 (3)	36,600 (5)	36,600 (5)	44,296 (3)	44,296 (3)
Changes in Carrying Capacity (expressed in significance)		Minor significant increase	Minor significant increase	Minor significant increase	Minor significant increase	Moderate significant decrease	Highly significant decrease	Moderate significant increase	Highly significant increase
Levels of Disturbance (harassment)		Will remain the same	Will remain the same	Will remain the same	Will remain the same	Minor increase	Minor increase	High increase	High increase
Cost of Management		Moderate significant increase	Moderate significant increase	Minor increase	Minor increase	Moderate significant decrease	Highly significant decrease	Highly significant increase	Highly significant increase
Inbreeding		Will remain the same	Will remain the same	Will remain the same	Will remain the same	Moderate significant increase	Highly significant increase	Minor increase	Minor increase

(1) Numbers are estimates based on expected carrying capacity of the Wild Horse Range allowing for use of wildlife and watershed protection; existing horse population is 130.

(2) Due to a drastic decline in ecological range condition, the carrying capacity of the Horse Range may be reduced dramatically; however, interbreeding, poor health and disease may drastically reduce the horse herd even if some forage remains.

(3) Includes all Federal, state and private lands.

(4) A slow increase in range condition will occur in the long term but, due to fragile soils, low precipitation and no rest rotation grazing system being utilized, increases in horse populations would be minimal.

(5) Includes designated PMWHR only.

Wildlife									
Terrestrial									
Big Game									
Protection from Habitat Disturbance (wilderness and/or withdrawal classifications) (acres)		20,407	20,407	28,586	28,586	0	0	60,888	60,888
Spring/summer Forage		Moderate increase	High increase	Minor increase	Moderate increase	Minor increase	Minor increase	Moderate increase	High increase
Competition for Forage and Habitat		Moderate decrease	Moderate decrease	Moderate decrease	Moderate decrease	Moderate decrease due to reduced livestock numbers	Same as short term except a significant increase in the PMWHR due to increased horse populations	Moderate decrease	Moderate decrease
Habitat Expansion (due to additional water sources)		Moderate increase	Moderate increase	Minor increase	Moderate increase	None	None	Moderate increase	Moderate increase
Habitat Reductions (due to sagebrush burning)		Minor	Minor	Minor	Minor	None	None	Minor	Minor
Harassment and Relocation (level)		Moderate	Moderate	Moderate	Moderate	High	High	Moderate	Minor
Upland Game									
Protection from Habitat Disturbance (due to decreased ORV use) (acres)		57,900	57,900	55,870	55,870	55,870	55,870	139,870	139,870
Nesting Cover		Minor decrease to sage grouse and chukar habitat due to sagebrush burning of 21,520 acres minor increase to sharptail	Same as short term	Minor increase	Moderate increase	Minor increase	Minor increase	Minor decrease to sage grouse and chukar habitat due to sagebrush burning of 21,520 acres; minor increase to sharptail	Same as short term

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SUMMARY OF ENVIRONMENTAL CONSEQUENCES (Continued)

Environmental Element	Existing	Proposed Action		Continuation of Existing Management		Low Level Management		High Level Management	
		Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
Upland Game (Continued)									
Habitat Expansion (due to additional watering sources)		Moderate Increase	Moderate Increase	Moderate Increase	Moderate Increase	None	None	Moderate Increase	Moderate Increase
Expansion of Chukar Habitat (due to additional wildlife watering sources) (acres)	75,000	Increase of 1,600	Increase of 1,600	Increase of 3,800	Increase of 3,800	None	None	Increase of 6,400	Increase of 6,400
Harassment and Relocation (level)		Moderate	Moderate	Moderate	Moderate	High	High	Moderate	Minor
Loss of Habitat		Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor
Waterfowl									
Nesting Cover		Moderate Increase	High Increase	Minor Increase	Moderate Increase	None	None	Moderate Increase	High Increase
Habitat Expansion		High Increase due to 19 reservoirs, 50 nesting islands and fencing of 7 existing reservoirs and 25 acres of dense nesting cover	High Increase due to 19 reservoirs, 50 nesting islands and fencing of 7 existing reservoirs and 25 acres of dense nesting cover	Moderate Increase due to 4 reservoirs, 20 nesting islands and fencing of 7 existing reservoirs	Moderate Increase due to 4 reservoirs, 20 nesting islands and fencing of 7 existing reservoirs	None	None	High Increase due to 19 reservoirs, 50 nesting islands and fencing of 7 existing reservoirs and 25 acres of dense nesting cover	Same as short term
Production		Increase of 350 ducks annually	Increase of 350 ducks annually	Increase of 140 ducks annually	Same as short term	No Increase	No Increase	Increase of 350 ducks annually	Same as short term
Non-game									
Habitat Expansion		Moderate Increase	High Increase	Moderate Increase	Moderate Increase	None	None	Moderate Increase	High Increase
Harassment and Relocation (level)		Moderate	Moderate	Moderate	Moderate	High	High	Moderate	Minor
Aquatic									
Habitat		Moderate Increase	High Increase	Moderate Increase	Moderate Increase	No Increase	Minor decrease in streambank vegetation due to no range improvements	Moderate Increase	High Increase
Loss in Aquatic Habitat Due to Sedimentation		Moderate decrease	Moderate decrease	Minor decrease	Minor decrease	Moderate Increase	Moderate Increase	Moderate decrease	High decrease
Minerals									
Coal									
Depletion of Coal Reserves from Existing Surface Mine (10,000 ton/yr)	40,000	80,000 (1)	170,000 (1)	80,000 (1)	170,000 (1)	80,000 (1)	170,000 (1)	80,000 (1)	170,000 (1)
(1) Emergency leasing would continue current production.									
Depletion of Coal Reserves from Anticipated Surface Mine (high - moderate)									
0-4 yrs - none	114,850,000	0		No additional leasing anticipated	No additional leasing anticipated	0		0	
5-11 yrs - none	114,850,000	0				0		0	
12-25 yrs - 300,000 ton/yr	114,850,000		4,350,000				4,350,000		4,350,000
Depletion of Coal Reserves from Anticipated Underground Mining									
0-3 yrs - none	Coal reserve figures are unavailable at the present time	0		No additional leasing anticipated	No additional leasing anticipated	0		0	
4-8 yrs - 30,000 ton/yr (1)		630,000				630,000		630,000	
9-25 yrs - 150,000 ton/yr			2,550,000				2,550,000		2,550,000
(1) 30,000 tons for 4th year and 150,000 tons/yr thereafter.									

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SUMMARY OF ENVIRONMENTAL CONSEQUENCES (Continued)

Environmental Element	Existing	Proposed Action		Continuation of Existing Management		Low Level Management		High Level Management	
		Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
Coal (Continued)									
Acres Disturbed									
0-4 years		6		6		6		6	
5-8 years		6		6		6		6	
9-25 years			365		25		365		365
Oil and Gas									
Acres in No-Lease Category	0	0 (1)	0 (1)	0	0	0	0	0	0
Acres Leased with Special Stipulations	49,870	70,000 (1) (2)	70,000 (1) (2)	49,870	49,870	0	0	70,000 (2)	70,000 (2)
Acres Leased with Standard Stipulations	599,573	579,443	579,443	599,573	599,573	649,443	649,443	579,443	579,443

(1) There is a strong probability that some areas will not be leased; acreage cannot be quantified at this time.

(2) This area encompasses the Twin Coulee WSA, PMWHR, Youngs Point, Hamilton's (Asparagus) Point, Beartooth Face, Bad Canyon, Steamboat Butte, Castle Butte, Weatherman's Draw, Crooked Creek Natural Area, Bridger Fossil Area, Red Dome, Red Valley, Petroglyph Canyon, Shepherd Ah-Nel, Acton area and Federal minerals within 2 miles of the Yellowstone River. New areas will be delineated where application of special stipulations is necessary.

Environmental Element	Existing	Proposed Action		Continuation of Existing Management		Low Level Management		High Level Management	
		Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
Locatable Minerals									
Acres Segregated from Mineral Entry	28,586	980	980	28,586	28,566	0	0	28,586	28,586
Watershed									
Watershed Condition		Moderate significant improvement	Highly significant improvement	Minor significant improvement	Moderate significant improvement	Minor significant deterioration	Moderate significant deterioration	Moderate significant improvement	Highly significant improvement
Water Quality and Streambanks + indicates increased quality - indicates decreased quality		- due to construction of waterfowl nesting islands	+	- due to construction of waterfowl nesting islands	+	-	-	- due to construction of waterfowl nesting islands	+
Recreation									
Hunting Opportunities (1)		Moderate increase	High increase	Minor increase	Moderate increase	Will remain the same	Minor increase	Moderate increase	High increase
Fishing Opportunities		Moderate significant increase due to access to 7 river sites and construction of 3 fish ponds	Moderate significant increase due to access to 7 river sites and construction of 3 fish ponds	Will remain the same	Will remain the same	Will remain the same	Will remain the same	Moderate significant increase due to access to 7 river sites and construction of 3 fish ponds	Moderate significant increase due to access to 7 river sites and construction of 3 fish ponds
River Floating Opportunities		Highly significant increase due to access to 7 river sites	Highly significant increase to access to 7 river sites	Will remain the same	Will remain the same	Will remain the same	Will remain the same	Highly significant increase due to access to 7 river sites	Highly significant increase due to access to 7 river sites
Physical Restriction to Cross-country Access Due to Fences, Land Treatments, etc.		Moderate increase	Moderate increase	Minor increase	Minor increase	Will remain the same	Will remain the same	Moderate increase	Moderate increase

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SUMMARY OF ENVIRONMENTAL CONSEQUENCES (Continued)

Environmental Element	Existing	Proposed Action		Continuation of Existing Management		Low Level Management		High Level Management	
		Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
Recreation (Continued)									
Restrictions to ORV Use									
Acres Closed	70	70	70	70	70	70	70	70	70
Acres Limited	55,800	57,830	57,830	55,800	55,800	55,800	55,800	139,800	139,800
Roads Opened (miles) (2)		9	9	0	0	13	13	0	0
Roads Closed (miles)		2	2	0	0	0	0	2	2
(1) Dependent upon habitat improvement and expansion.									
(2) Use limited to designated open roads only.									
Acres Available for Environmental Education Opportunities	77	77-0-133 (1)	77-0-133 (1)	77	77	0	0	133	133
(1) Dependent upon loss of facility due to heavy vandalism and demand.									
Wild Horse Interpretation Opportunities		Minor Increase	Minor Increase	Will remain the same	Will remain the same	Will remain the same	Will remain the same	Moderate Increase	Moderate Increase
Cultural Resources									
Existing Sites	1,262 (1)								
Potential Sites (disturbed)		182 (2)		24		30		189 (2)	
(1) Includes all Federal, state and private lands within the resource area.									
(2) Does not include known sites within wilderness study areas.									
Visual Resources (adverse impacts)		Moderate significant impacts	Minor significant impacts	Moderate significant impacts	Minor significant impacts	Moderate significant impacts	Highly significant impacts	Moderate significant impacts	Minor significant impacts
Wilderness	Four areas containing 32,302 acres under wilderness study	Potential loss of wilderness values primarily in the Twin Coulee WSA from timber harvest	Preservation of wilderness values on 22,907 acres; potential loss of wilderness values on 9,395 acres	Potential loss of wilderness values primarily from timber harvest	Potential loss of wilderness values because of no legislative protection	Potential loss of wilderness values from timber harvest or oil and gas development	Potential loss of wilderness values because of no legislative protection to all 32,302 acres	Preservation of wilderness values on all 32,302 acres	Same as short term
Social/Economic									
Number of Ranches Affected		43	43	28	28	28	28	43	43
Economic Impact to Rancher of Decreases in BLM AUMs		0	0	0	0	Moderately significant	Moderately significant	0	0
Economic Impact to Rancher of Increases in BLM AUMs		Moderately significant	Moderately significant	Insignificant	Insignificant	0	0	Moderately significant	Moderately significant
Impact to Regional Economy		Insignificant	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant
Impact on Attitudes		Insignificant	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant

Source: BLM, 1982

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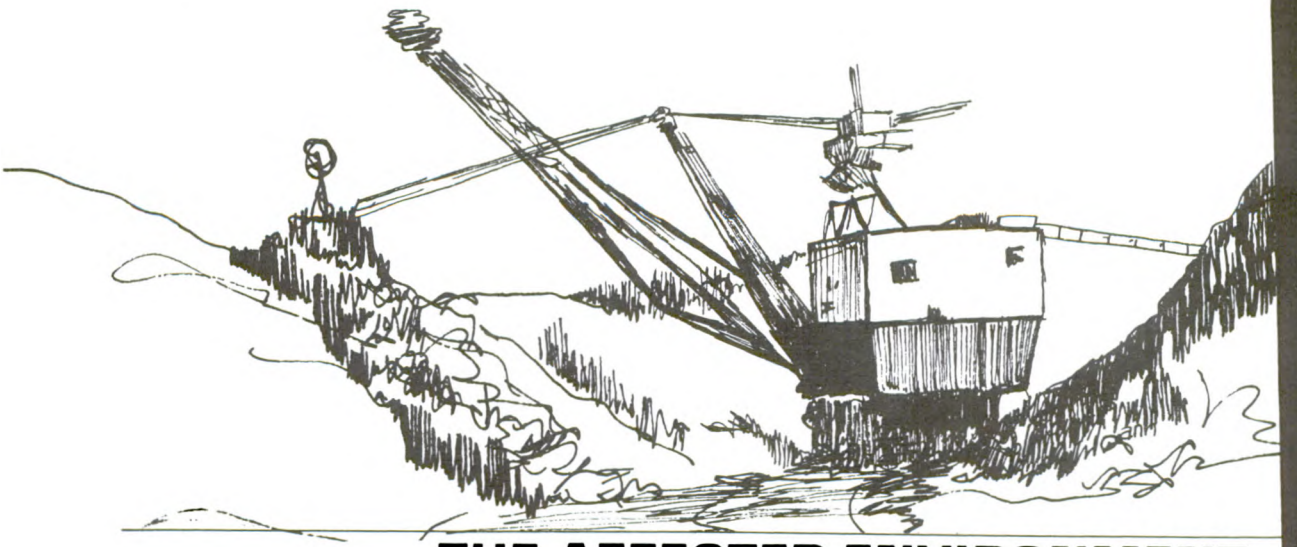

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THE AFFECTED ENVIRONMENT

INTRODUCTION

This chapter provides a discussion, by resource, of the affected environment. Each section includes a description of the present and projected resource potential and Bureau of Land Management (BLM) management techniques. This information is summarized from the Management Situation Analysis document (MSA) on file at the BLM Billings Resource Area Office.

CLIMATE

The topographical conditions in the Billings Resource Area create a variable climate. Winters are generally cold with occasional mild or open years. Periods of cold weather may quickly be changed by warm chinook winds, followed by warmer weather. Moderate to strong winds occasionally cause blizzard conditions, primarily during the months of January, February and March. The average fall-winter temperature in the resource area is 36 degrees Fahrenheit (°F).

Summers are characterized by extreme temperature variations, low relative humidity, local thundershowers and an average temperature of 61°F. Most of the annual precipitation comes from high intensity summer showers. The average growing season varies from less than 100 days in the mountain areas, to more than 130 days in the valley bottoms. The average annual precipitation ranges from approximately 6 inches on the Pryor Mountain Wild Horse Range to more than 30 inches in the Beartooth uplands. The northern portions of the resource area average 11 to 13 inches of precipitation per year.

AIR QUALITY

The Federal Environmental Protection Agency (EPA) assigns air quality classifications with Class I being the best, and other classifications (Class II, Class III, etc.) indicating the increment of degradation from the desired air quality. Most of the Billings Resource Area is rated Class II.

Portions of the U.S. Forest Service's wilderness area (Absaroka-Beartooth) in the Billings Resource Area are classified Class II. The Bighorn National Recreation Area in Big Horn County, also maintains a Class II rating. Yellowstone County is designated Class II.

The remainder of the Billings Resource Area (in Musselshell, Golden Valley, Wheatland, Sweet Grass, Stillwater and Carbon Counties) is designated Class II.

GEOLOGY AND TOPOGRAPHY

The resource area lies within the Missouri Plateau subdivision of the Great Plains physiographic province. The terrain consists mainly of plains with isolated mountain ranges rising abruptly above the prairie (Perry, 1962).

Mountain ranges in the resource area include the Absaroka-Beartooth, Pryor, Big and Little Snowy, Bull and Crazy Mountains. Uplift of the rocks and resultant erosion have exposed the core of these ranges, providing evidence of their structures, and the forces which produced them.

The Absaroka-Beartooth Mountains dominate the southwest portion of the resource area. The range is composed mostly of Precambrian metamorphic rocks uplifted several thousand feet along faults. Overlying sedimentary rocks have been folded, and in several cases, tilted to a nearly vertical position, as seen in the limestone palisades south of Red Lodge, Montana.

The Pryor Mountains developed through generally vertical uplift along deep seated "basement" faults, fracturing the overlying strata into five distinct blocks, each with high-angle faults on their north and east flanks (Blackstone, 1975).

The Snowy and Little Belt Mountain Ranges are the most obvious expression of a general uplift which affected all of central Montana. This uplift was caused mainly by horizontal compression rather than the vertical forces previously described. The strata were folded into a series of anticlines (upfolds) and synclines (downfolds) (Reeves, 1931).

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The Bull Mountains are a series of small, broken plateaus, little more than hills compared to the other mountains in the region. The massive sandstone and clinker beds which cap the plateaus are more resistant to erosion than the soft sandstones and shale which underlie them. The harder rocks are preserved as remnants of higher topographic relief, even though the geologic structure is a basin (Woolsey, et al., 1917).

The Crazy Mountains are unique. They were formed by the intrusion of molten rock (magma). The magma rose from great depth, and was injected into fissures between strata, doming the overlying sediments. Subsequent erosion exposed this igneous rock. A system of dikes (magma injected into cracks through the strata) radiate outward from the mountains like spokes from the hub of a wheel.

The surrounding plains areas are composed of flat-lying or tilted sedimentary rocks deposited during the Cretaceous Period and Paleocene Epoch. The rocks are mostly shales and sandstones with minor limestone, coal and bentonite beds. Folds and fault systems associated with mountain uplifts affect the bedding and outcrop pattern of these rocks (see Stratigraphic Column Chart, Figure 3.1).

Alluvium represents the most recent strata. It consists of fine to coarse grained sediments deposited by moving water and is found in active or abandoned stream channels, or as outwash benches on the foothills of mountains.

Energy Minerals

Southcentral Montana has had a rich oil and gas exploration history. The first oil well drilled in the state was in the Elk Basin Field in 1915. It extended previous exploration in northern Wyoming. The first "wildcat" well was drilled in Devils Basin in 1919 (Knapp, 1956).

Early oil and gas exploration was concentrated on areas with favorable surface geologic structures for the accumulation of oil. Thus, most early exploration occurred along the crests of anticlines, and near faults. As technology, especially seismic exploration, advanced, companies became able to identify promising structures or horizons which had no surface expression. Many of the more recent discoveries have relied upon seismic exploration for indications of where to drill.

There are 55 fields which have produced hydrocarbons (oil & gas) in the resource area. Most of the fields are structural, or structural/stratigraphic traps. Eleven fields have been abandoned. Table 3.1 gives the production figures and producing horizons for these fields (Montana Oil and Gas Commission, 1981).

Coal may be found at several stratigraphic horizons, including the Cretaceous Eagle, Judith River, Hell Creek and the Paleocene Fort Union formations. Table 3.2 is an analysis of coal samples from the fields described below.

The Eagle formation outcrops (comes to the surface) over a large area, forming rimrocks along the Yellowstone and Clarks Fork River valleys. Coal is found in the middle (shale) member of the Eagle. Valuable coal occurs in an area bounded on the north by Rock Creek, and on the south and east by the Clarks Fork (see Figure 3.2). Shale or bone partings separate the coal into as many as three distinct beds. These partings may have affected the way coal was mined and its overall quality.

A major fault offsets the Eagle outcrop, effectively dividing coal development into two fields (see Figure 3.2). Underground mines were opened in this area in the late 1800's. Most development occurred at the mine west of Bridger, where the coal was thickest, though several smaller mines were opened west of Fromberg. The mines shut down in the 1930's. No total production figures are available, though over 100,000 tons were produced in 1907.

The coal resources for the Bridger Field can only be estimated. There has been no recent exploration, and the only records are from mines abandoned nearly 50 years ago. The coal field covers 13,660 acres, of which 9,240 acres are Federally owned. If the measured thickness of 4 feet of coal is consistent throughout the field, the total coal resource is about 95 million tons (64 million tons Federal). Due to the numerous thin partings, no more than 50% of the coal, 32 million tons, would be recoverable through normal underground mining methods.

HKH Associates has filed a letter of interest in Federal coal in the Joliet/Fromberg Field. The group has obtained leases on private coal near the outcrop, and on surface lease options from some surface owners overlying Federal coal. Federal ownership forms a nearly solid block of coal 3 to 4 miles wide, and ½ mile inside the outcrop.

The BLM has identified Federal coal having development potential through either surface or underground mining (Berg, 1982). The area of strippable coal totals 1,360 acres, of which 320 acres are Federal. Coal resources within that area were estimated at 12.7 million tons (2.32 million tons Federally owned). At 90% recovery, over 2 million tons of Federal coal are considered strippable.

The area of underground minable coal is much larger. Approximately 8,680 acres of Federally owned coal underlies approximately 5,480 acres of this. Overall, 68.7 million tons of coal resources have been identified (45.8 million tons Federal coal). If it is assumed that underground mining would be by room and pillar method, 50% of the coal, or 34.4 million tons (23.3 million tons Federal coal) would be recoverable.

The Silvertip and Stillwater fields (see Figures 3.3 and 3.4) contain coal from the shale member of the Eagle formation. The coal is fairly uniform, averaging a thickness of about 4 feet in two or three beds separated by shale partings. Little coal was produced from either field, though many prospects were noted on older topographic maps, and some may still be visible on the ground. The only potential for renewed development of fields would be small quantities for local domestic use, which is unlikely. Coal development in the Silvertip Field may conflict with production from the Elk Basin Oil Field, which occupies a similar area.

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FIGURE 3.1 STRATIGRAPHIC COLUMN IN THE BILLINGS RESOURCE AREA.

STRATIGRAPHIC COLUMN

		FORMATION		Range of Avg Thickness	DESCRIPTION
CENEZOIC	QUATERNARY	Alluvium			Unconsolidated stream and fan deposits range from fine to coarse grained.
CENEZOIC	TERTIARY	Tongue River Member	Fort Union Formation	Up to 2500'	Light yellow sandstone with brown & light-dark gray shale; many coal beds; reddish clinker.
CENEZOIC	TERTIARY	Lebo	Fort Union Formation	Up to 2500'	Dark gray shale with orange to purple ironstone concretions and green-gray beds of altered volcanic ash.
CENEZOIC	TERTIARY	tullock	Fort Union Formation	Up to 2500'	Light tan to yellow sandstone with brown shale and tan-gray siltstone; some coal and clinker.
MESOZOIC	CRETACEOUS	Hellcreek		300—1200'	Fresh water deposits of alternating sandstones and clay shales.
MESOZOIC	CRETACEOUS	Fox Hills Sandstone		100—200'	Gray to yellowish sandstone and sandy shales.
MESOZOIC	CRETACEOUS	Bear Paw		900'	Steel-gray to black marine shale containing a few grayish white and dark-red concretions and beds of bentonite.
MESOZOIC	CRETACEOUS	Judith River		200—400'	Fresh and brackish water deposits consisting of irregularly and thin-bedded gray clayey sand sandstone, lignite clay and coal beds.
MESOZOIC	CRETACEOUS	Claggett		500'	Dark-brownish-black marine shale containing persistent yellow calcareous concretionary beds; bentonite and tan sandstone in the upper part.
MESOZOIC	CRETACEOUS	Eagle		220'	Massive and thin-bedded buff to white sandstone, carboneous shale and coal beds.
MESOZOIC	CRETACEOUS	Telegraph Creek		180—300'	Dark gray-black, thin beds of marine shale with thin sandstone members especially near the base; fossiliferous; gypsiferous.
MESOZOIC	CRETACEOUS	Niobara		200'	Upper part marl, lower lightish yellow to whiteish limestone.
MESOZOIC	CRETACEOUS	Carlisle		150—300'	Gray shales with thin shaly to silty sandstone layers, some bentonite, some ironstone concretions.
MESOZOIC	CRETACEOUS	Greenhorn		600'	Black shales with hard, thin sandstone beds, buff-light gray limestone layers in eastern Montana with interbedded calcareous shales, some bentonite.
MESOZOIC	CRETACEOUS	Frontier		150—500'	Alternating beds of gray to yellow sandstone and dark carbonaceous shales; contains bentonite beds in Carbon County. Produces gas in Dry Creek field.
MESOZOIC	CRETACEOUS	Mowry		180—325'	Hard light gray shales and thin-bedded sandstone; contains numerous fish scales; also bentonite mined in Carbon County.
MESOZOIC	CRETACEOUS	Thermopolis		700—760'	Upper and lower members are thick dark marine shales; middle member yellow-brown sandstone; shales have bentonite beds mined in Carbon County.
MESOZOIC	CRETACEOUS	Cloverly / Kootenai		180—500'	Upper member — Greybull sandstone; middle multicolored shale member; lower, Pryor conglomerate contains vertebrate fossils and petrified wood. Some uranium mineralization; gas producer in Dry Creek field.
MESOZOIC	JURASSIC	Morrison		150—200'	Interbedded buff sandstone and gray-green shales; vertebrate fossils; some uranium mineralization.
MESOZOIC	JURASSIC	Swift		10—300'	Green shales and fine-grained thin bedded brown or green sandstone; fossiliferous (marine).
MESOZOIC	JURASSIC	Rierdon		50—250'	Gray to green marine shales and thin limestone; fossiliferous.
MESOZOIC	JURASSIC	Piper		0—150'	Red to green shales and limestone with some gypsum.

		FORMATION		Range of Avg Thickness	DESCRIPTION
PALEOZOIC	TRIASSIC	Chugwater / eroded		0—800'	Brick-red sandstones, shales and siltstones, often ripple-marked; gypsum bed 20—30' thick.
PALEOZOIC	PERMIAN	Ember / eroded		5—100'	White porous limestone. Reported gypsum bed, oil producer in Elk Basin field.
PALEOZOIC	PENNSYLVANIAN	Ten Sleep / quadrent		50—105'	White to buff cross-bedded soft sandstone; oil producer in Elk Basin field.
PALEOZOIC	PENNSYLVANIAN	Amsden		150—350'	Red shales, white limestone, chert/limestone breccia; uranium mineralization; contains oil in Central Montana fields.
PALEOZOIC	PENNSYLVANIAN	Alaska Bench		100—150'	Hard gray fossiliferous limestone; exposed in Snowy Mountains.
PALEOZOIC	PENNSYLVANIAN	Tyler		5—100'	White to brick-red cross-bedded channel sandstone; produces oil in Central Montana fields.
PALEOZOIC	MISSISSIPPIAN	Heath	Big Snowy Group	150—500'	Found in Central and Eastern Montana only. Heath: Black shales and black limestones; serves as source rock for petroleum in Central Montana oil/metalliferous shale.
PALEOZOIC	MISSISSIPPIAN	Otter	Big Snowy Group	150—500'	Otter: Light green shales and limestone.
PALEOZOIC	MISSISSIPPIAN	Kibbey	Big Snowy Group	150—500'	Kibbey: Red to brown sandstones and shale; some gypsum
PALEOZOIC	MISSISSIPPIAN	Mission Canyon	Madison Group	600—1200'	Mission Canyon: Massive white or gray (marine) limestone.
PALEOZOIC	MISSISSIPPIAN	Lodgepole	Madison Group	600—1200'	Lodgepole: Thin bedded, cherty, fossiliferous limestone; produces oil in Elk Basin field.
PALEOZOIC	DEVONIAN	Three Forks		200—250'	Multicolored shales with thin dark limestone and yellow sandstone.
PALEOZOIC	DEVONIAN	Jefferson		50—600'	Brown to gray and black limestone and dolomite.
PALEOZOIC	OROOVICIAN	Big Horn Dolomite		250—300'	Thin bedded or massive limestones and dolomites; upper portion very fossiliferous.
PALEOZOIC	CAMBRIAN	Gros Ventre		700'	Greenish and gray calcareous shales and oolitic limestones.
PALEOZOIC	CAMBRIAN	Flathead		185'	Hard dense quartzite with red to brown sandstone.
PRECAMBRIAN		Pre Cambrian			Gneisses and schists, exposed only near Dryhead area of East Pryor Mountain, and on top of Beartooth Mountains.

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TABLE 3.1: OIL PRODUCTION

Oil Fields	Cumulative	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969
		Production (Barrels)											
Big Gully	82,575	4,593	6,518	11,981	39,368	20,115							
Big Gully, North	12,755	2,915	3,701	6,139									
Big Wall	7,008,909	104,447	112,785	90,003	64,962	84,562	69,860	62,117	62,266	75,488	99,403	131,845	172,717
Big Wall, North	6,948	575	982	2,762									
Clark's Fork	83,368	467	843	157		545	787						
Clark's Fork, North	1,023,765	1,505	1,554	897	1,066	1,381	2,423						
Clark's Fork, South	80,230	2,236	1,651	2,707	3,086	4,827	11,842			4,230	18,382		
Dean Dome	26,719	3,146	5,367	7,137	7,620	2,962							
Delphia	303,094	2,123	2,186	3,472	1,683	4,676	7						
Devil's Basin	63,462	3,583		1,406	796	1,951	2,040						
Dry Creek	4,076,740	10,454	15,019	23,985	42,698	17,815							
Dry Creek, West	4,888	1,639	3,068	181									
Elk Basin	76,531,786	917,797	987,401	941,075	1,023,146	1,071,748	1,190,265	845,581	1,386,509	1,582,651	1,790,439	2,061,378	2,440,434
Elk Basin, Northwest	1,188,945	12,219	11,206	13,103	21,105	39,137	31,744	26,991	36,021	45,182	79,540	139,973	141,791
Fiddler Creek	153	153											
Frannie	721,869	3,654	5,905	8,678	8,406	8,258	8,170	7,784	11,558	18,304	26,901		
Gage	564,321	1,988	772	998	1,286	1,576	1,377						
Golden Dome	40,757	252		1,807	2,193								
Hiawatha	1,348,894	30,627	36,218	47,842	53,607	49,161	52,604	62,797	64,154	77,858	88,603	113,639	189,990
Howard Coulee	99,304	4,002	13,051	22,992	24,753	8,093	5,370	21,043					
Ivanhoe	4,422,375	13,779	20,200	30,941	27,316	30,015	32,829	31,259	38,171	48,881	53,401	87,493	94,172
Jim Coulee	3,460,263	143,639	205,571	258,529	312,981	489,808	500,029	463,170	476,508	529,071	80,789		
Keg Coulee	4,872,296	64,366	94,798	85,079	96,732	142,135	110,637	140,120	262,297	179,839	149,692	164,186	124,893
Keg Coulee, North	357,123	19,080	18,715	23,248	14,944	19,591	23,349	24,262	35,622			9,122	11,183
Kelley	880,092	13,359	13,799	18,542	25,357	35,000	44,237	46,293	62,524	85,876	53,414	49,798	100,269
Laurel	825	391	434										
Little Wall Creek	1,940,980	213,932	196,183	223,990	196,103	319,342	364,259	297,316	39,646	37,053	46,313	6,687	
MacKay Dome	10,721	4,993											
Mason Lake	504,325	139,967	175,885	23,587	3,114	4,475	5,705					10,178	12,672
Mason Lake, North	10,047	1,803	1,663	1,160									
Melstone	2,248,862	152,349	138,068	131,392	121,995	17,228	17,256	19,065	22,872	23,077	21,205	21,593	27,144
Mosser	292,032	5,893	5,949	5,441	5,974	6,145	4,679						
Ragged Point	3,150,125	52,696	52,462	53,392	96,784	136,932	238,019	145,936	154,670	61,175	68,801	77,267	83,556
Roscoe Dome	2,319	635	1,684										
Sheepherder	58,480	2,771	3,464	4,404	7,290	11,139	25,502						
Stensvad	10,020,655	6,662	4,399	12,053	71,793	53,722	108,185	257,508	543,468	304,233	427,078	242,006	163,661
Tippy Butte	11,845	7,025		4,820									
Wagon Box	21,024	944	714	891	1,382	2,318	4,304						
Weed Creek	581,395	4,724	4,281	5,629	14,774	13,381			5,513	16,976	29,656	48,437	89,486
Willow Creek, North	271,294	9,146	7,559	8,013	10,369	14,646	11,398	14,406	34,398	25,699	58,839		
Winnett Junction	500,796	77,678	84,029	106,090	39,989	36,191	48,538	76,274	32,007				
Wolf Springs	4,566,948	15,420	25,730	19,951	12,046	13,574	15,414	16,696	18,960	29,893	53,138	40,744	62,776
Abandoned Fields													
Belfry	91,804												
Gage, Southwest	16,289												
Lake Basin	473,639												
Musselshell	14,938												
Pole Creek	169,726												
Womans Pocket	3,526												
Yellowstone	39,405												
Wildcats													
Carbon	6,398												
Musselshell	925												
Stillwater	11,283												

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Table 3.1 (cont.)

OIL AND GAS PRODUCING HORIZONS

Field	Hydrocarbon	Formation	Age
Belfry	(oil)	Tensleep	(Penn.)
Big Coulee	(gas)	3rd Cat Creek	(L. Cret.)
	(gas)	Morrison	(U. Jur.)
Big Gully	(oil)	L. Tyler	(Penn.)
Big Gully, North	(oil)	L. Tyler	(Penn.)
Big Wall	(oil)	Amsden	(Penn.)
	(oil)	Tyler	(Penn.)
Big Wall, North	(oil)	Stensvad	(Penn.)
Clarks Fork	(oil)	Frontier	(U. Cret.)
Clarks Fork, North	(gas and oil)	Dakota	(L. Cret.)
Clarks Fork, South	(oil and gas)	Greybull	(L. Cret.)
Dean Dome	oil and gas	Greybull	(L. Cret.)
Delphia	(oil)	Amsden	(Penn.)
Devil's Basin	(oil)	Heath	(U. Miss.)
Dry Creek	(gas)	Judith River	(U. Cret.)
	(gas)	Eagle	(U. Cret.)
	(gas)	Frontier	(U. Cret.)
	gas	Greybull	(L. Cret.)
	(oil)	Greybull	(L. Cret.)
Dry Creek, Middle	(gas)	Frontier	(U. Cret.)
	(gas)	Dakota	(L. Cret.)
Dry Creek, West	(oil and gas)	Greybull	(L. Cret.)
Dry Creek, shallow gas	(gas)	Judith River	(U. Cret.)
	(gas)	Eagle	(U. Cret.)
	(gas)	Virgelle	(U. Cret.)
Elk Basin (Montana part)	oil	Frontier	(U. Cret.)
	oil	Embar-Tensleep	(Penn-Penn)
	oil	Madison	(Miss.)
	oil	Big Horn	(Orl.)
Elk Basin, Northwest	oil	Frontier	(U. Cret.)
	oil and gas	Embar-Tensleep	(Penn-Penn)
	oil	Madison	(Miss.)
Fiddler Creek	oil	Greybull	(L. Cret.)
Frannie (Montana part)	oil	Tensleep	(Penn.)
Gage	(oil)	Amsden	(Penn.)
Golden Dome	(gas)	Eagle	U. Cret.
	(oil)	Greybull	L. Cret.
Hiawatha	(oil)	Tyler	(L. Penn.)
Howard Coulee	(oil)	Tyler	(L. Penn.)
Ivenhoe Dome	oil	Morrison	(U. Jur.)
	oil	Amsden	(L. Penn.)
	oil	Tyler	(L. Penn.)
Jim Coulee	oil	Tyler	(L. Penn.)
Keg Coulee	(oil)	Tyler	(Penn.)
Kelley	(oil)	Tyler	(Penn.)
Lake Basin	(gas)	Eagle	(U. Cret.)
	(gas)	Telegraph	(U. Cret.)
Lake Basin, North	gas	Judith River	(U. Cret.)
	gas	Claggett	(U. Cret.)
	gas	Virgelle	(U. Cret.)
	gas	Eagle-Frontier	(U. Cret.)
Laurel	(oil)	Dakota	(L. Cret.)
Little Wall Creek	(oil)	Tyler	(Penn.)
MacKay Dome	(oil)	Greybull	(L. Cret.)
Mason Lake	(oil)	Dakota	(L. Cret.)
Mason Lake, North	(oil)	Amsden	(Penn.)
Melstone	(oil)	Tyler	(Penn.)
Mosser Dome	(oil)	Greybull	(L. Cret.)
Ragged Point	(oil)	Tyler	(Penn.)
Rapelje	(gas)	Judith River	(U. Cret.)
	(gas)	Claggett	(U. Cret.)
	(gas)	Eagle	(U. Cret.)
	(gas)	Virgelle	(U. Cret.)

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Table 3.1 (cont.)

OIL AND GAS PRODUCING HORIZONS (cont.)

Field	Hydrocarbon	Formation	Age
Roscoe Dome	(oil)	Dakota	(L. Cret.)
Sheepherder	(oil)	Tyler	(L. Penn.)
Stensvad	(oil)	Tyler	(Penn.)
Tippy Buttes	(oil)	Tyler	(Penn.)
Wagon Box	(oil)	Tyler	(Penn.)
Weed Creek	(oil)	Amsden	(Penn.)
Willow Creek, North	(oil)	Tyler	(Penn.)
Winnett Junction	(oil)	Tyler	(Penn.)
Wolf Springs	(oil)	Amsden	(Penn.)

PRODUCTION, MCF

Gas Fields	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	TOTAL
Big Coulee	1,038 834	997,198	1,110,189	1,215,817	1,126,326	1,070,160	1,510,941	1,486,330	1,397,243	1,388,246	1,235,579	857,667	14,434,530
Clarks Fork, North							41,286	22,908	7,953	603		630	73,380
Clarks Fork, South	84,192						5,884	34,604	41,711	77,322	106,781	35,098	302,000
Dry Creek	450,222	470,661	427,736	412,539	461,849	406,956	696,958	728,593	765,124	1,089,148	1,117,789	1,084,288	8,441,813
Dry Creek, Middle							4,657	40,732	35,390	25,978	26,002	28,796	161,555
Elk Basin	945,218	1,190,053	813,162	476,402	463,018	601,687	372,823	369,600	216,535	75,104	90,270	58,612	5,672,484
Lake Basin	1,220,808	884,765	820,416	544,026	119,933	983,843	1,115,082	649,048	355,940	265,594	429,260	593,560	9,229,817
Rapelje						78,363	704,373	490,646	332,266	189,490	173,277	140,748	7,982,275

Source: Montana Oil and Gas Commission, 1970-1981

TABLE 3.2: ANALYSES OF COAL SAMPLES

	Values							
	As Received				Air Dried			
Coal Field	Btu/lb	% Fixed Carbon	% Ash	% Sulfur	Btu/lb	% Fixed Carbon	% Ash	% Sulfur
Bear Creek	11,194	46.71	6.02	1.44	11,422	47.67	6.14	1.47
Bridger	10,037	44.89	13.35	0.33	11,005	49.22	14.64	0.36
Joliet-Fromberg	10,235	46.16	16.42	0.63	10,629	47.94	17.05	0.65
Mammoth-Rehder	10,120	45.10	6.34	0.49	10,430	46.50	6.54	0.50
McCleary	9,270	46.30	6.50	0.43	10,250	51.10	7.20	0.47
Silvertip	?	?	?	?	?	?	?	?
Stillwater	10,680	44.50	16.41	0.53	10,940	45.60	16.81	0.54

Sources:

1. Woodruff, E.G. 1907. The Red Lodge Coal Field, USGS Bull. 341a, p. 105
2. Washburne, C.W. 1907. Coal fields of the northeast side of the Bighorn Basin, Wyoming, and of Bridger, Montana, USGS Bull. 341c, p. 198
3. Woolsey, et al. 1947. The Bull Mountain Coal Field, USGS Bull. 647, p. 51,53
4. Calvert, W.R. 1916. Geology of the Upper Stillwater Basin, Stillwater and Carbon Counties, Montana with special reference to coal and oil, USGS Bull. 641, p. 210

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Figure 3.2. Joliet Fromberg/Bridger Coal Map

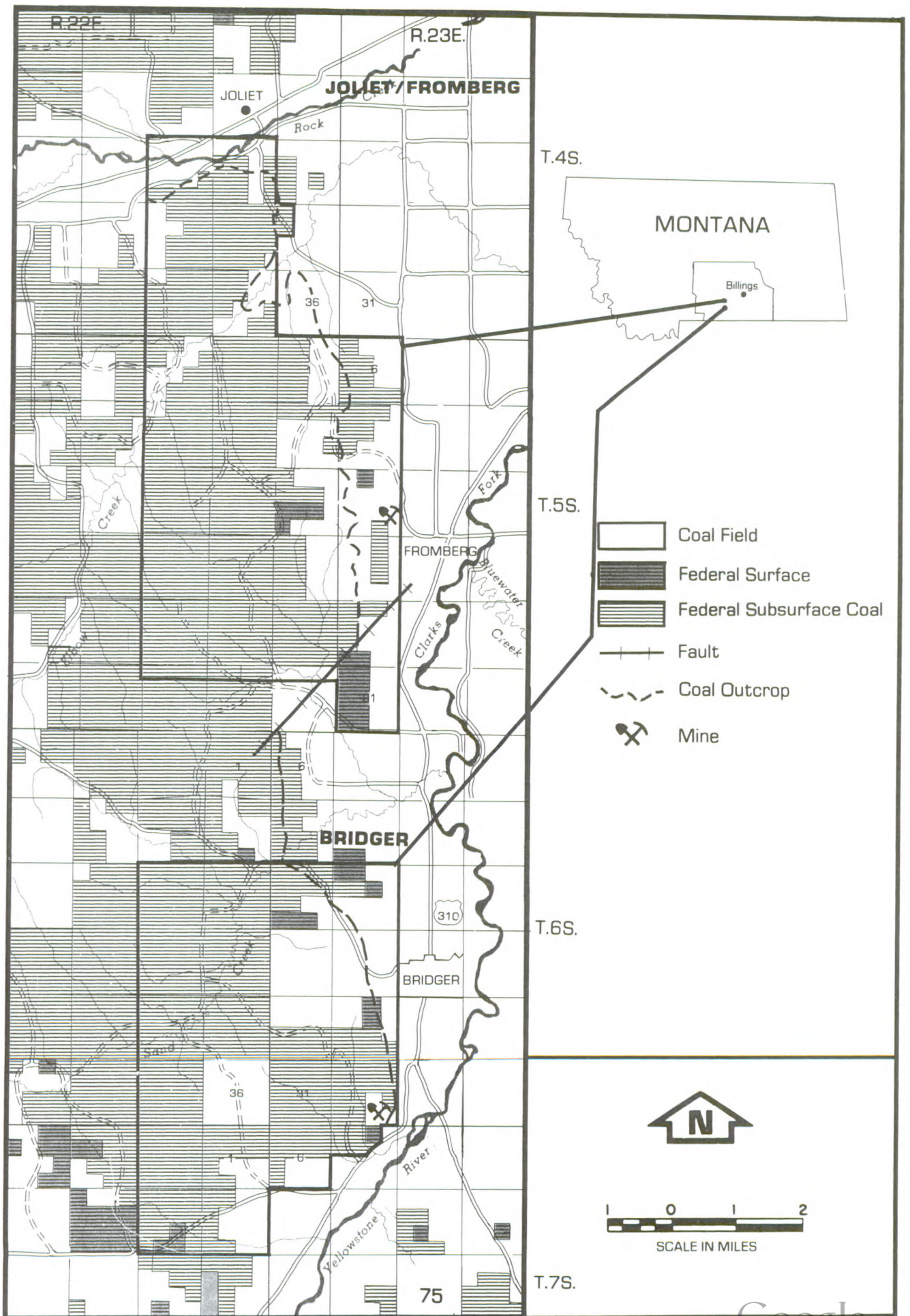

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Figure 3.3. McCleary Coal Bed and Silvertip Coal Field Map

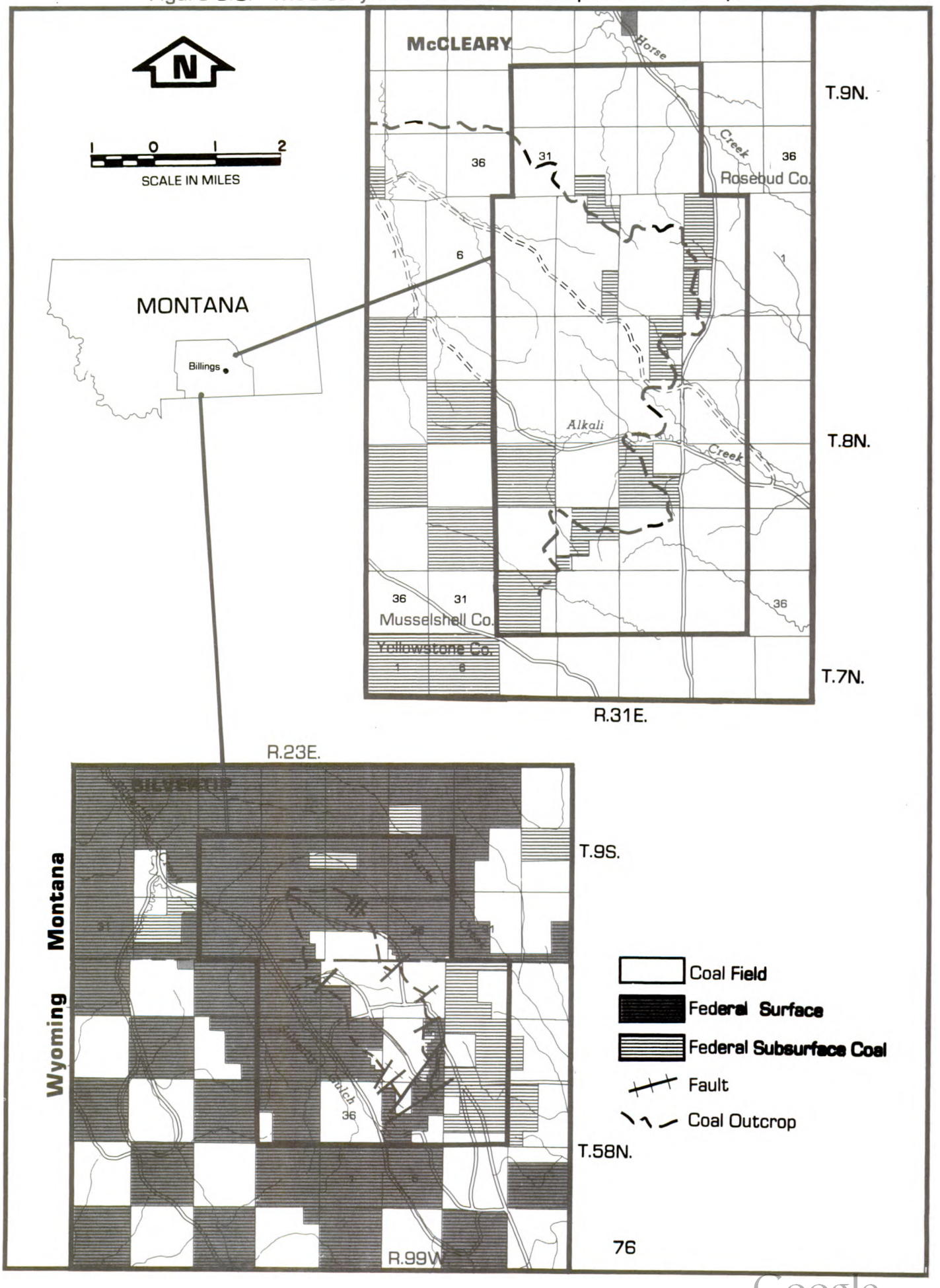

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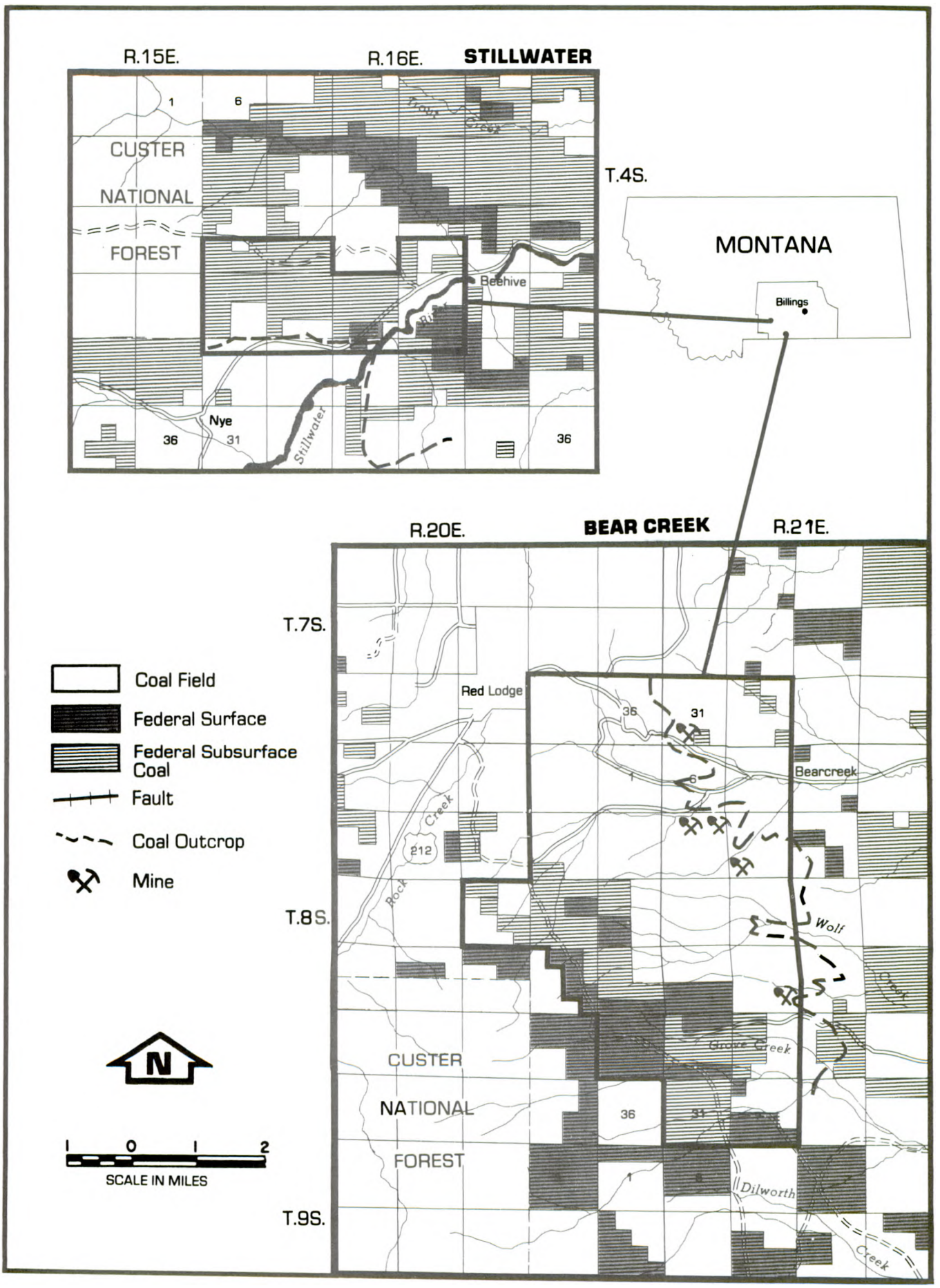
Figure 3.4. Stillwater and Bearcreek Coal Fields



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Federal ownership of coal is scattered in the Stillwater Field. The coal outcrop in the Silvertip Field is almost entirely in Federal ownership. No accurate estimate of the recoverable coal resources within these fields may be made at this time.

The Judith River and Hell Creek formations contain coal which is generally thin (less than 2 feet thick) and often has a high content of volcanic ash, lowering its quality. These formations outcrop in western Musselshell and Yellowstone Counties and northern Carbon County. Little of this coal is in Federal ownership. Development potential is considered low.

The Bull Mountain Field contains coal from the Tongue River member of the Fort Union formation (see Figure 3.5). Twenty-six coal beds have been mapped and named. The geologic structure of the field is a shallow basin, with the north flank having a steeper pitch. Coal beds outcrop in the form of a ragged bullseye, with younger beds exposed more toward the center. Most of these coals are important only in portions of the field, since they thin or pinch out completely elsewhere.

The most important coal to date has been the Roundup bed. Most of the 39.8 million tons produced from this bed, have been from underground mines near Roundup, and Klein, Montana. This coal may be mined out, with no further production potential.

The two coal beds creating the most interest at this time are the McCleary and Mammoth-Rehder. The McCleary bed lies relatively low in the Tongue River member. It is distinguishable throughout the field, but is only important in the northeastern portion (south of Melstone) where it may reach 8 feet in thickness. The Keane underground mine produced coal from the McCleary in the early 1900's, but it has since closed. The U.S. Minerals Management Service (now part of BLM) has indicated areas where Federal coal has high to moderate potential for development either through surface or underground mining methods (McKay, 1982). The area of strippable coal totals 5,640 acres, of which 1,280 acres are Federally owned. Coal resources within that area were estimated to be 42.6 million tons (8.9 million tons Federal). At 90% recovery, over 8 million tons of Federal coal in the McCleary bed is considered strippable. The area of underground minable coal covers 3,120 acres, containing 25.5 million tons of coal. The Federal ownership in this area is 400 acres, with 1.78 million tons. Assuming the coal would be mined by room and pillar method, 50% or 0.89 million tons would be recoverable. Should long wall mining be used, the potential coal recovery rate should be higher.

The Mammoth-Rehder coal bed lies near the middle of the Tongue River member. It consists of an underlying Mammoth coal bed (averaging 9 feet thick) separated from the overlying Rehder tongue (2 to 5 feet thick) by a parting which varies from 0 in the southeast to 35 feet in the western part of the field (producing one 13' thick coal bed). This coal bed is the thickest and most consistent in the field. Though the coal is often burned at outcrop, the burning did not progress far underground.

This coal bed may be developed through both surface and underground mines. The basinal structure of the Bull Mountains limits surface mining to a 1/4 to 3/4-mile wide strip along the outcrop of the coal seam (see Figure 3.5). Within this area (58,040 acres), about 604 million tons (308 million tons Federal) of coal resources may be found, of which probably 90% are recoverable.

Almost the entire coal bed may be developed through underground mining methods. The BLM has identified over 590 million tons of coal underlying over 32,500 acres. Federal ownership is 255 million tons underlying 14,000 acres. Depending upon the mining method, 50-60% of this coal may be recoverable. (See coal section of the MSA.)

Given the relatively high coal quality, surprisingly little development has occurred, though the coal was heavily prospected in the period 1910-1920. It's probable that these coal beds were too inaccessible to develop at that time.

At the present time two small surface mines are in operation, each producing about 10,000 tons of coal per year. The coal supplies the regional domestic market. The PM Mine has produced Burlington Northern-owned coal for many years. The Divide Coal Company had operated an underground mine for many years on privately-owned coal. In 1962, the company was issued a Federal lease (M-052647) and began mining Federal coal. The mine was converted from an underground mine to a surface operation in 1972 (the company felt it could not economically comply with the Federal Coal Mine Health and Safety Act of 1969). The Divide Coal Company is stripping in the direction of the abandoned underground mine. Unless the lease acreage is increased the company will exhaust the reserves within the leasehold in less than 4 years.

Consolidation Coal Company opened a test pit in the northwestern part of the field in 1971. To determine its suitability for generating electricity approximately 50,000 tons of coal were mined. The company also wanted to test several reclamation techniques. Though the coal proved suitable for use in coal-fired utilities, no further development followed.

Thickness, quality and depth-to-coal information has since been obtained on the checkerboarded Burlington Northern coal. From this data (Conner, 1980;1981), a preliminary high to moderate stripping potential map was prepared, using a cutoff ratio (overburden to coal) of 20:1 (see Figure 3.5). It is understood that using this ratio results in coal tonnage figures which may not all be minable. It does, however, permit further study of all acreage underlain by coal having some potential for development. Coal with overburden thicker than this would not likely be developable unless by underground mining methods. The Federal coal ownership is checkerboarded, covering almost 44% of the coal in the field. Figure 3.6 shows the area of surface mineable coal based on a 10:1 stripping ratio. The coal is currently of high development potential. However, the 20:1 ratio will be used in determining high and moderate development potential coal.

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Figure 3.5 Mammoth-Rehder Coal Bed (20:1 ratio)

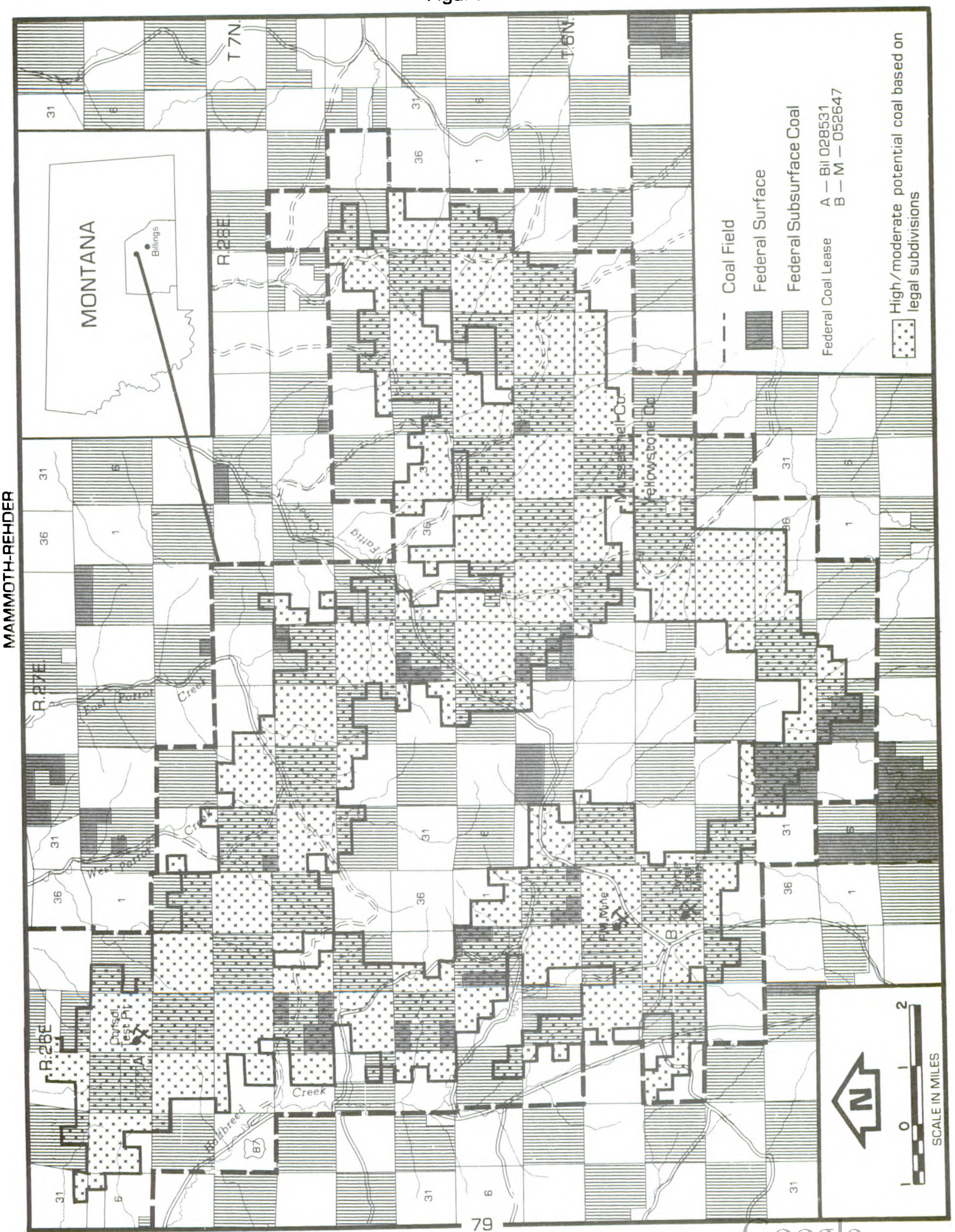

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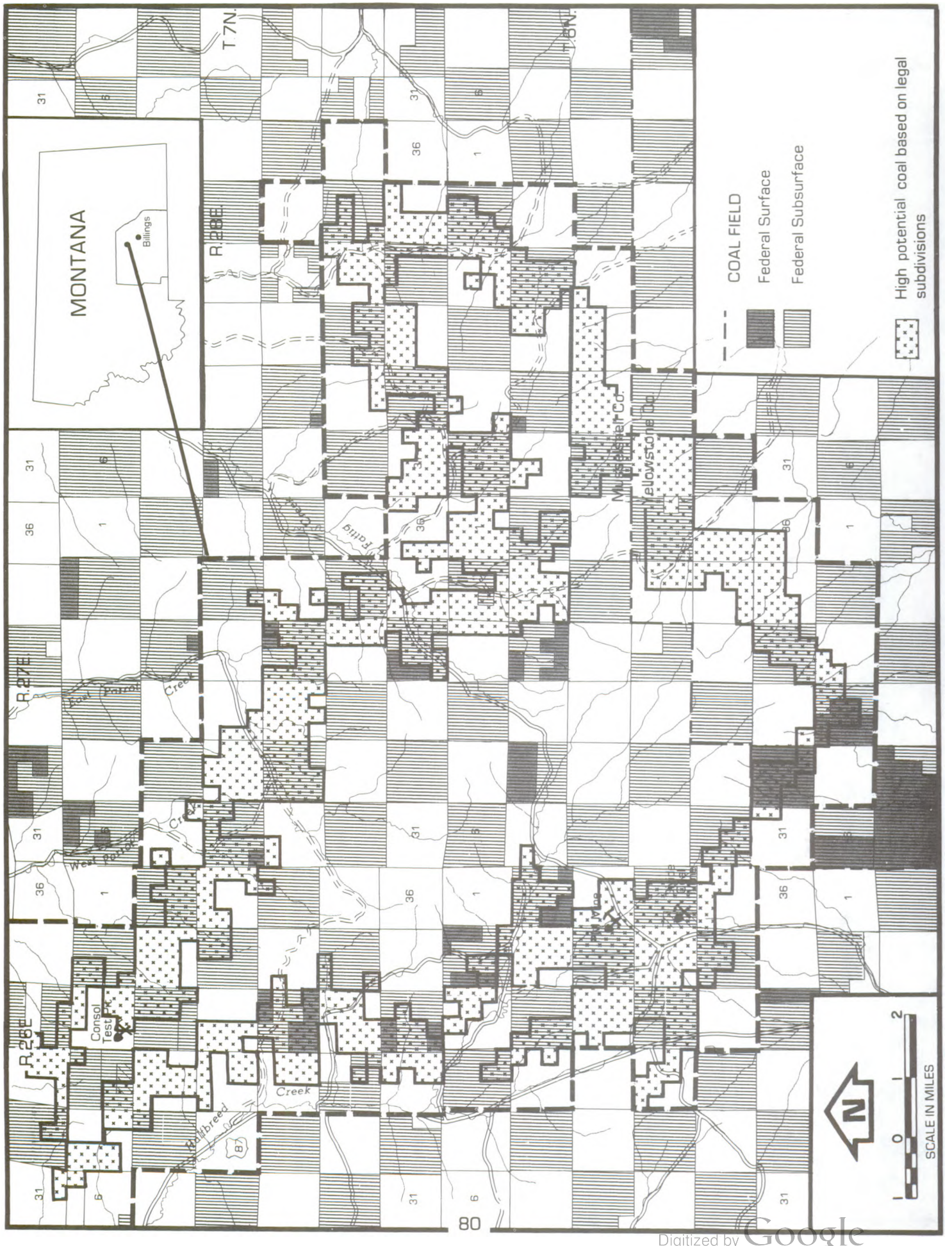
Figure 3.6: Mammoth-Rehder Coal Bed (10:1 ratio)



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Meridan Lands and Minerals Company (a wholly owned subsidiary of Burlington Northern) has expressed interest in exchanging Federal coal rights for Burlington Northern coal rights in order to create two blocks of coal which may be mined independently. No formal proposal has yet been made and no specific areas identified.

Louisiana Land and Exploration Company continued coal inventories and began undertaking environmental and economic feasibility studies in 1979, with the hope of obtaining a permit to underground mine BN coal. The company withdrew its application in late 1981 after determining that new development was economically unfeasible under the current conditions.

A stumbling block to coal mining in this area is the lack of rail service. The Burlington Northern Railway recently purchased the Milwaukee Road right-of-way between Slayton and Gage, so only a spur would be required to obtain access to the coal field. Other forms of transportation to carry large tonnages of coal to market are not efficient.

The Bear Creek Field also contains coal from the Fort Union formation. Here, nine separate beds, totaling 71 feet of coal were found in a 825 foot stratigraphic interval. The field is limited on the east and north by the line of outcrop, on the south by gradual thinning of beds, and on the southwest by the Beartooth thrust fault. West of Rock Creek, the coals lie in a narrow, steeply dipping zone which again terminates against the Beartooth fault. Small geologic structures interrupt the general southwesterly dip of the bedding. Several thin igneous dikes cut the strata, but they did not interfere with past coal mining.

There is a long history of coal mining in the Rock and Bear Creek areas. Mining began near Red Lodge in 1882. Production increased from 232,000 tons in 1886 to over 1 million tons in 1917. Most of the coal was used by the Northern Pacific Railway, though some went to the Anaconda smelter near Butte. Around 1924 demand for this coal began to diminish due to competition from the open pit mine at Colstrip. In 1932 the mines closed. Over 11 million tons of coal had been produced, entirely by underground, room and pillar mining. Coal was even mined under the town of Red Lodge.

Mining in the Bear Creek area progressed a little behind the Red Lodge Field. Production was very limited until the railroad from Bridger to Bear Creek was completed in 1906. At least eight companies were operating in the area in the early 1900s. Production peaked in the early 1920s, then began to decline in 1926 due to competition from oil and gas. World War II gave impetus for increased production, but after the war production again declined. After abandonment of the Bear Creek-Belfry spur of the railroad in 1953, only small scale mining and trucking of coal to Red Lodge kept the field from closing completely. Eventually even this stopped. Total production of the field was 13 million tons. The Beartooth Coal Co., owned by Portland General Electric, reopened the Brophy underground mine in 1980. That year, over 7,000 tons of coal were produced. Due to labor problems and a soft market, the mine has since shut down.

Though abandoned underground mines in the Bear Creek Field produced coal in the proximity of Federal lands, there has been no recent exploration to determine the thickness, extention, or depth of the several coal beds below Federal lands in this field. Therefore, an estimate of the coal resources may only be very grossly made. Should the thickness of the nine coal beds described above remain consistent (which is unlikely), Federal lands may contain as much as 600 million tons of coal, of which only half would be recoverable. Federal coal ownership forms a nearly solid block 2 to 3 miles inside the outcrop of the various beds.

Westmoreland Resources operates the Absaroka strip mine, along Sarpy Creek in eastern Big Horn County. The company has produced over 30 million tons of state and Crow Tribal owned coal since it opened in 1974. The mine has reported reserves of 600 million tons. The mine has little likelihood of affecting Federally owned coal in the Billings Resource Area, and will not be discussed further.

Only in the Bull Mountain Field may Federal coal be developed by surface mining methods. Surface owners of land overlying Federal coal from both the Mammoth-Rehder and McCleary seams were consulted to determine their preference for or against leasing of their land for surface mining. The results of the consultation are shown in Figures 2.1 and 2.2 and in Table 2.3. Federal coal was found unacceptable for further consideration where the surface owners responded negatively to surface mining..

For the same reason, the unsuitability criteria were only applied in the Bull Mountain Field to coal which passed through the above "screen". The results of that application may be seen in Appendix 2.4 and on the figures and table identified above. The unsuitability criteria will not be applied to underground minable coal until a mine plan application is received which identifies the location of proposed surface facilities.

Industrial Minerals

Bentonite

Bentonite is a general term used to describe a group of clay minerals produced by the alteration of volcanic ash. They have special chemical or physical properties which have hundreds of industrial applications ranging from oil exploration to cattle feed.

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Bentonites occur in bedded sedimentary rocks, generally marine shales, deposited during the Cretaceous Period. The thickness of individual beds may range from several inches to more than 6 feet. Valuable bentonite beds have been found in Carbon County. Bentonite of unknown quality can also be found in Yellowstone, Musselshell and Golden Valley Counties.

Two mining companies have located claims for bentonite on the west and southwest flanks of the Pryor Mountains in Carbon County. The American Colloid Company has over 300 placer mining claims, totalling over 6,000 acres of land. These claims are located in the Cloverly, Thermopolis, Mowry and Frontier formations. The company has been prospecting extensively for many years, and has developed some of the claims and trucked the bentonite to its plant near Lovell, Wyoming for processing. The American Colloid Company has produced almost 320,000 tons of bentonite in the last 6 years. The company has been operating under a State Mining and Reclamation Plan since August 1972. Under the Federal surface management regulations (43 CFR 3809), this plan was accepted by BLM in November 1981. American Colloid Company has filed seven patent applications, covering 18 claims and 360 acres. No patents have been issued.

Wyo-Ben Incorporated has located 37 association placer mining claims totalling over 4,000 acres. Wyo-Ben Incorporated is producing bentonite from claims in Wyoming and recently started prospecting its claims in Montana. However, it has not filed a mining plan application with either the Montana Department of State Lands or BLM to date.

The market for bentonites is expected to increase at a rate of approximately 3% per year through 1990 (Ampian, 1982). Wyoming and Montana are the major suppliers of this valuable commodity.

Gypsum

Gypsum also has a multitude of applications, including use as a soil conditioner and in wallboard and plaster construction. It occurs in two horizons in the southern Pryor Mountains. A reported 80 foot thick bed outcrops in the Permian Embar formation, east of Gyp Spring. A 20 to 30 foot thick bed of gypsum occurs at the top of the Triassic Chugwater formation, southwest of Gypsum Creek. There has been no record of production, although old remains of a small kiln can be seen along Gypsum Creek, near the Wyoming state line. Gypsum is also found west of the Pryors in three separate deposits near Bowler, Bluewater and Red Dome. The gypsum lies at the top of the Chugwater formation here, as well.

The only deposit which has been developed is the Daisy-Pillsbury Mine north of Red Dome which opened in 1893. From 1897 to 1904, a small plaster mill was operated nearby. Two placer claims were patented. No mining has ensued since 1920 (Knappen and Moulton, 1930).

There are presently no mining claims located specifically for gypsum, although lode mining claims for uranium minerals may include areas underlain by gypsum deposits near Gypsum Creek.

Prospecting, mining and marketing methods for gypsum are similar to those for bentonite. Because of the distance to market areas, there is probably no demand for Carbon County gypsum. Georgia Pacific can satisfy local demand from its mine at Himes, 10 miles south of Lovell, Wyoming.

The depressed condition of the construction and housing industry has adversely affected the demand for gypsum products. The demand for gypsum products is expected to increase at an annual rate of 2.3% through 1990 (Pressler, 1982). The development potential for Pryor gypsum is considered low.

Vanadium/Uranium

Vanadium/uranium mineralization was discovered in the Pryor Mountains in 1953. The mineralization takes two forms in the Pryor Mountain area. On Red Pryor and East Pryor Mountains, it occurs as mineral coating on limestone breccia in the collapsed caverns of the Madison/Amsden formational contact. Further south, in the hogbacks which overlook Big Coulee, uranium minerals have replaced dinosaur bone remains which are found in the Morrison and Cloverly formations. Concentration of the ores may exceed 0.5% U^3O^8 (uranium oxide) and 1.5% V^2O^5 (vanadium oxide).

Over 1,000 lode mining claims have been located in the area. Many have been maintained since the mid-1950's. Most of the existing road and trail network and the old bulldozed pits are due to the extensive prospecting efforts of 1955-1969. Ore deposits are found through the examination of the surface geology and through the use of a geiger counter or scintillometer. Both detect radiation from the decaying uranium atoms. More recent exploration methods involve the use of a truck-mounted diamond-bit drilling rig.

No ore has been shipped from the area since 1966. From 1955-1966, 7,955 tons of ore were produced, with a gross value of $326,646 (Frank McGinley, 1971, the Atomic Energy Commission, personal communication).

In the early years, uranium ore shipped from the Pryors was subsidized by the Atomic Energy Commission. The Pryor ores were not economical to develop, but since they were high in calcium carbonate, they were valuable in processing other uranium ores (R. Marchant, 1980, personal communication).

The Pryor Mountain uranium ores can be contrasted with those from the Colorado Plateau (New Mexico, Colorado, Utah) in that the ore material is generally of higher concentration (0.7% vs. 0.1%) but of much lower tonnage (1-5,000 tons vs. 100,000+ tons).

The uranium market is presently very weak. Demand for uranium as fuel for nuclear power plants has decreased along with reduction in power plant construction. High building costs and growing public concern about nuclear power have slowed the industry.

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Vanadium is a useful metal for the production of iron and steel alloys, and in the chemical industry. Consumption of the metal should grow at an annual rate of 4% through 1990 (Kuck, 1982). The development potential for these minerals in the Pryors is considered low.

Metalliferous Oil Shales

The Heath formation occupies an extensive area in central and eastern Montana. It serves as a source rock for much of the petroleum produced in central Montana. The Heath outcrops along the flanks of the Snowy Mountains in Golden Valley County.

Black shales in the Heath may have unusually high levels of several important metals: zinc (0.69%), molybdenum (0.09%), selenium (0.012%), vanadium oxide (0.8%) and nickel (0.11%), as well as being "oil shales" with values up to 10 gallons of oil per ton (Desborough et al., 1981).

Two mining companies have located 166 lode mining claims in northern Golden Valley County. The companies, U.S. Energy (66 claims) and Gold Peak Mining (100 claims), staked their claims in April 1981. Most of the claims lie north of the Heath outcrop. Little exploration has occurred to date. Development potential for the deposit is unknown, but suspected to be low since there is no known technology to economically recover such small concentrations of these minerals.

Limestone

Limestone outcrops occur over much of the Pryor and Big Snowy Mountains. It's used locally as railroad ballast and in sugar refining. High purity limestone may have application in the chemical industry as well.

Limestone is mined by Big Horn Calcium Company from two patented claims on the west flank of Red Pryor Mountain. The company also owns 10 (160 acre) placer claims on Custer National Forest lands just east of this quarry. Big Horn Calcium has sufficient reserves to maintain its operation for many years. There does not seem to be a demand for limestone from the Big Snowy Mountains. The deposit may be too far from a use area to be developable at this time.

Sand and Gravel

Sand and gravel are generally unconsolidated sediments deposited along stream channels, abandoned channels about present channels (terrace deposits) or as alluvial fans in mountain foothills. The material is used mostly in road grading and building sites. The value of the sand and gravel depends upon its accessibility, total volume and the percentage of "fines" (clays) found with the sand or gravel.

Most sand and gravel deposits in the resource area are found on private land. They tend to occur along stream channels or terraces where lands have been patented under the homestead laws. However, some terrace deposits remain in Federal ownership. Gravel pits have been developed on public lands along the Yellowstone River near Custer, and in Carbon and Musselshell Counties.

There is a continuous market demand for sand and gravel. The most important deposits are those near population centers or use areas. Transportation of gravel is expensive, and may substantially increase the cost to market it.

Building and Decorative Stone

Building and decorative stone is abundant in the resource area. This material includes lichen-covered rock, flagstone and other colorful rocks. Some important building and decorative properties include shape, thickness, color and its ability to be split.

The resource area generally makes two to four small tonnage sales of decorative stone each year. Most often, the material is lichen-covered "moss" rock.

SOILS/WATERSHED

Runoff from the Billings Resource Area drains into the Yellowstone, Musselshell, Clarks Fork of the Yellowstone, Boulder, Stillwater or Bighorn River (see Table 3.3 for flow data for these rivers). Each major stream is characterized by a dendritic pattern of tributary streams that range from ephemeral (very short-lived) to perennial (present all year). Most of the land uses proposed by this resource management plan (RMP) will be along the Yellowstone mainstem, or in the drainage basins of the Clarks Fork of the Yellowstone or the Musselshell River.

TABLE 3.3: FLOW RECORDS FOR PRINCIPAL RIVERS

	Average Flow (CFS)	Maximum Flow (CFS)	Minimum Flow (CFS)
Musselshell River	229	9,160	.6
Yellowstone River	7,038	69,500	430
Clarks Fork of Yellowstone	1,199	11,800	88
Stillwater River	969	12,000	58
Boulder River	616	9,840	10
Big Horn River	3,970	59,200	275

Source: Water Resources Data for Montana, USGS, 1982

The Yellowstone River, one of the longest free-flowing rivers in the U.S., enters the resource area near Springdale, Montana and flows approximately 150 miles before leaving the resource area at the eastern boundary. The Yellowstone River, from the Yellowstone National Park boundary to Pompey's Pillar, is a stream segment which is subject to Section 5(d) of the Wild and Scenic Rivers Act (PL 90-542). There are 170 square miles of public land in this portion of the Yellowstone River Basin, excluding the Clarks Fork of the Yellowstone.

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The Musselshell River begins in the Castle Mountains of central Montana, outside the resource area boundary. The river flows east for 125 miles then turns north and leaves the resource area east of Melstone, Montana. There are 179 square miles of public land in this portion of the Musselshell River Basin.

The Clarks Fork of the Yellowstone River originates in Wyoming and enters the resource area at the Montana state line near Belfry. It flows approximately 60 miles north to its confluence with the Yellowstone River near Laurel. There are 261 square miles of public land in this portion of the Clarks Fork Basin.

Approximately 57 square miles of public land in Carbon County provide runoff to the Bighorn River.

The Stillwater River originates in the Beartooth Mountain Range of southern Montana on U.S. Forest Service lands and flows approximately 53 miles to its confluence with the Yellowstone River near Columbus, Montana.

The Boulder River originates on U.S. Forest Service lands in the Absaroka Mountain Range and enters the resource area at the Park/Sweet Grass County line. Approximately 24 miles of this river flow through the resource area.

A high percentage of the annual runoff (Rioux and Dodge, 1979) occurs March through June. Snowmelt, intense rain storms and saturated or frozen soils are some factors contributing to high runoff during the spring. Severe thunderstorms in the summer months generally do not result in flooding. These intense storms are significant because soils in the resource area are subject to a very high hazard of water erosion.

Soils in the Billings Resource Area are derived mainly from sedimentary bedrock and alluvium. Differences in climate, parent material, topography and erosional conditions result in soils with diverse physical and chemical properties. Following is an overview of the four geomorphic groups and associated soils present in the area.

Geomorphic Group One, Shale and Sandstone Uplands: These are soils of the shale and sandstone uplands occurring throughout the area. The depth of soils in this group will range from very shallow to deep, and their texture is mainly loamy in the surface layers with local areas of clayey or sandy textures. The number of rock fragments and amount of calcium carbonate (lime) in these soils will vary depending on the kind of bedrock found locally. The terrain is usually gently rolling to very steep highly dissected landscapes.

Geomorphic Group Two, Floodplains, Stream Terraces and Fans: This group includes soils of the floodplains, stream terraces and fans found throughout the area. This group contains deep, nearly level to strongly sloping soils that are well drained to very poorly drained. Soil textures range from loamy fine sand to clay. The number of rock fragments will be more numerous along terrace edges near fast moving water areas. These soils are formed in alluvium dissected by incised water channels.

Geomorphic Group Three, High Terraces and Benches: This group includes the soils of high terraces and benches occurring mainly in Carbon, Musselshell and Yellowstone Counties. This group comprises deep, well drained soils on nearly level to moderately sloping terrain dissected by deep drainages. Their textures are mainly loamy or loamy-skeletal and high in calcium carbonate. These soils are formed in gravel outwash and alluvium from mixed rock sources.

Geomorphic Group Four, Mountains and Foothills: This group includes soils of the mountains (Beartooth, Bull, Crazy, Pryor and Snowies) and foothills areas within the Billings Resource Area. Soil depth runs from very shallow to deep, depending on proximity to rock outcrops. They are well drained, and are on gently sloping to very steep, dissected terrain. The texture is loamy or loamy-skeletal with high calcium carbonate in soils of the Pryor and Snowy Mountains. These soils are formed from material derived from sedimentary, igneous and metamorphic rocks.

Soil survey data was obtained from the Yellowstone County Soil Survey (1972), the Carbon County Area Soil Survey (1975), the Order 3 Soil Survey of Golden Valley-Musselshell Area (1978) and soil and vegetation inventory updates for parts of these areas in 1981. Scattered tracts of public land in Big Horn, Golden Valley, Stillwater, Sweet Grass and Wheatland Counties will not be considered specifically in the evaluations due to lack of information.

Erosion

The erosion hazard rating is the susceptibility of a soil to erosion when bare of vegetation. The soils on public land in the Billings Resource Area have a high erosion hazard from both wind and water due to the slope of land, the kind and amount of ground cover, the high calcium carbonate (lime) content and the low organic matter in surface layers. Good vegetation cover reduces both wind and water erosion.

Soils in the south Carbon County area are mainly in geomorphic soil groups ONE, THREE and FOUR. Weather records show that wind gusts up to 70 miles per hour are not uncommon. Soils that are sparsely vegetated and only slightly disturbed are subject to a high soil blowing hazard. Soils high in lime are especially vulnerable to soil blowing, as it contributes to the flocculation of soil particles. This enhances their detachment from the soil mass and they are thus easily airborne. Since most of the soils in the area have some lime in the surface layers, this phenomenon contributes to the very high wind erosion hazard. Soils especially high in lime are those developing in material weathered from limestone. Soils on the foothills, fans and terraces in and adjacent to the limestone areas of the Pryor Mountains are thus subject to a very high soil blowing hazard.

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The hazard of water erosion is high even though the average annual precipitation is quite low over much of the area. Most of the precipitation falls from April through June with a high probability of intense rain storms during this period. At this time the many very shallow and shallow, sparsely vegetated soils with slopes greater than 8% are subject to a very severe hazard of water erosion. The reason these soils are especially vulnerable to water erosion is because they only have the capacity to hold from less than 0.5 to a maximum 4 inches of water. Often these soils reach their maximum water storage capacity early in April, and the runoff potential from additional precipitation becomes high. Other soils with slopes greater than about 15% are also subject to water erosion if not suitably protected by vegetation. The effects of water erosion throughout south Carbon County are visible on much of the terrain.

Soils in the northern part of Yellowstone County are mainly in geomorphic soil group ONE. Narrow areas of alluvium along water courses are in group TWO. These soils are weathering from calcareous shale and sandstone. Annual precipitation of 12 to 14 inches, and low organic matter content combine to create a high water erosion hazard on slopes greater than 15%.

Soils north of the Musselshell River in Musselshell County are mainly in geomorphic soil groups ONE and THREE. Narrow areas of very strongly salt and sodium affected alluvium of soil group TWO lie along water courses. These soils are weathering from calcareous and acid shales, and from sandstone. The high terraces and benches are outwash from mixed rock sources (limestone, sandstone and shale). Annual precipitation of 11 to 14 inches, and low organic matter content create a high water erosion hazard on slopes greater than 15%. Bare soils are susceptible to severe to very severe soil blowing due to lime content, low organic matter in surface layer and soil textures. The most effective means to control both wind and water erosion is by maintaining a suitable vegetation ground cover and by minimizing soil disturbance.

Runoff

Runoff in this resource area varies according to dominant range sites within a respective watershed, and a number of precipitation variables. Analysis of runoff, in this RMP, uses soil groupings (see Appendix 3.1) as separate ecological units. To eliminate evaluating runoff under varying precipitation events (i.e., intensity, magnitude), the average annual runoff will be used, and quantified in acre-feet/acre.

Using these soil groupings, an average annual runoff constant will be given to each grouping. The soil groupings are correspondent to dominant range sites. Soil groups 1, 2 and 3 will produce .06 acre-feet/acre for loamy textured soils; .08 acre-feet/acre for fine textured soils; and .04 acre-feet/acre for loamy and clayey textured soil areas in the 5-9" precipitation zone of Carbon County. Soil group 4 will produce .20 acre-feet/acre. Since sandy textured soils represent a small percentage of land area, runoff from these areas is insignificant.

Runoff can also be discussed using runoff potentials or hydrological soil groups. A hydrological soil group has been defined as one of four categories of runoff potential soils can have. The four categories range from low runoff potential to high runoff potential (Soil Conservation Service, 1972). Appendix 3.1 aligns the various soil groupings used in this document with a hydrological soil group. In Chapter 4 both the average annual runoff and the runoff potential will be analyzed in those land areas where runoff is affected by BLM's actions.

Water Quality

Water quality in the rivers and streams in the resource area is generally good (see Table 3.4). Pollution problems are primarily non-point source oriented related to agricultural practices, with sediment and salinity the two most common forms of pollution. However, fecal coliforms in excess of state standards have been recorded from various sampling sites. Particular problems (increases in sodium and sulfate salts and dewatering) have been identified on the lower Musselshell River (Hills, 1977) and Silvertip Creek. The BLM is also concerned about water quality in its man-made reservoirs, which range from small livestock ponds to large irrigation reservoirs.

The "208 Planning" program, a cooperative planning program between Federal and state governments (Water Pollution Control Act of 1972, Public Law 92-500, Section 208), is aimed at identifying areas of non-point sources of pollution and methods to control these problems. Portions of a 208 planning area include Sweet Grass, Stillwater, Yellowstone and Carbon Counties. The BLM's involvement in the "208 Planning" program includes a yearly report of BLM's monitoring programs to the State Water Quality Bureau.

Streambank Erosion

Riparian areas are wetland areas bordering rivers and streams. These vegetative classifications and types are defined in Appendix 3.2. Streamside vegetation provides a filter against the overland flow that carries sediment and other pollutants into streams. Streamside vegetation stabilizes channel banks against cutting action, controls water pollution, regulates stream flows, influences water temperature and enhances subsurface groundwater recharge (Holechek, 1980 and Shovlin, 1982). There are 30 miles of public land segments adjacent to major rivers and their tributaries in this resource area that provide for excellent woody floodplain type. There are 41 miles of perennial and intermittent streams in the "I" allotments having segments of woody floodplain type potential.

Water Use

In 1979, BLM began filing water rights applications and claims with the State of Montana, Department of Natural Resources and Conservation (DNRC). To date, BLM has filed for 463 water sources with the state. These water claims are either provisional permits or prior use claims. Water right applications have been filed on reservoirs, springs and wells. The resource area will continue to apply for Montana State water use permits on all proposed water developments.

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TABLE 3.4: SUMMARY OF SELECTED WATER QUALITY PARAMETERS

	Specific Conductance Micromhos	pH	Fecal Coliform Cols./100 ml.	Hardness Mg./L	Alkalinity Mg./L	Sulfate Mg./L	Sediment Concentration Mg./L	Temp. °C
Musselshell River[1]	678 to 4900	8.1 to 8.5	1 to 3200	340 to 990	150 to 370	300 to 1200	20 to 7110	0° to 34.5°
Yellowstone River[1]	140 to 720	7.1 to 8.5	36 to 540	70 to 210	59 to 160	26 to 130	1 to 4260	—
Clarks Fork of the Yellowstone[1]	160 to 1280	7.0 to 8.8	9 to 5500	54 to 395	60 to 228	16 to 332	118 to 850	0° to 22.5°
Stillwater River[1]	45 to 270	6.7 to 8.7	—	22 to 110	19 to 89	4.5 to 30	—	0° to 13°
Boulder River[1]	43 to 117	—	—	17 to 44	19 to 37	.8 to 10	2 to 223	0° to 15.0°
Bighorn River[1]	384 to 1940	8.0 to 8.7	20 to 57	280 to 430	150 to 210	270 to 470	20 to 146	0° to 30.0°
Silver Tip Creek[2]	6000 to 8000	7.9 to 8.3	—	—	—	—	0.1 to 30	1° to 29°
Bridger Creek[2]	1525 to 2350	7.7 to 8.4	—	—	—	—	0.0 to 152	11° to 25°
Gyp Creek[2]	2020 to 4000	7.5 to 8.5	—	—	—	—	0.1 to 3.7	4° to 20°
Halfbreed Creek[3]	1380 to 1850	8.0 to 8.4	—	540 to 680	430 to 580	380 to 550	8 to 80	.5° to 22.5°
West Parrot Creek[3]	1250 to 1340	8.0 to 8.5	—	300 to 380	340 to 420	290 to 320	4 to 12	11° to 19.5°
Fattig Creek[3]	1300 to 2040	8.2 to 8.7	—	470 to 710	320 to 480	410 to 770	4 to 46	9° to 26°

Sources:
[1]Water Resources Data for Montana, USGS
[2]BLM Inventory
[3]Hydrologic Data From the Bull Mountains Area, South-Central Montana, USGS

Groundwater

The resource area is underlain by sandstones and limestone that provide large quantities of water to wells. In the northern portion of the area, wells drilled to the Kootenai formation yield up to 50 gallons of good quality water per minute. In the Pryor Mountain area, wells and springs reportedly yield up to 1 million gallons of water per day from the Madison Limestone. Water quality is good for domestic and agricultural uses (Miser, 1930). Other formations may yield smaller quantities of water acceptable for these uses.

In the Bull Mountain area, water supplies are not as dependable as elsewhere in the resource area. Groundwater apparently occurs in perched aquifers. Springs or seeps are located near outcrops of the Mammoth-Rehder coal bed. The water quality of springs is good, with calcium, magnesium and bicarbonate the principal ions. Deeper aquifers are present, but at depths that vary from several tens of feet to several hundred feet. The deeper aquifers have lower quality water with sodium and sulfate ions predominate (Rioux and Dodge, 1979). It has not yet been determined if the coal beds in the Bull Mountains serve as aquifers. A study being conducted by the Montana Bureau of Mines for BLM is aimed at determining groundwater characteristics in order to assess impacts of coal mining on the groundwater resource of the Bull Mountains.

VEGETATION

The Soil Conservation Service has identified five broad geographic zones in Montana to aid in describing the range sites and native vegetation. Parts of three of these zones, the Eastern Sedimentary Plains, Western Sedimentary Plains and Foothills and Mountains are within the Billings Resource Area (see Climax Vegetation Map 2—Map Pocket).

The Eastern Sedimentary Plains zone encompasses the area between the Musselshell and Yellowstone Rivers and east of the Roundup/Billings highway. This area includes approximately 110,000 acres of public land and is within the 10-14 inch precipitation zone. Vegetation consists primarily of big sagebrush, bunch grasses, western wheatgrass and a zone of the ponderosa pine/grassland type.

The Western Sedimentary Plains include a variety of vegetative types. This zone takes in essentially all of northern Musselshell, Golden Valley, Wheatland and western Yellowstone Counties; those portions of Stillwater and Sweet Grass Counties north of the Yellowstone River; and the Clarks Fork Valley and Triangle area in Carbon County. Precipitation ranges from 6 to 19 inches. This zone includes approximately 260,000 acres of public land. Vegetation consists primarily of sagebrush/grassland and grassland types, though it does include the red desert/saltshrub type on the Wyoming border in southern Carbon County, as well as some ponderosa pine/grassland type vegetation.

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The remaining 55,000 acres of public land in the Billings Resource Area are located in the foothills and mountain zone. This includes the Pryor Mountains, the north face of the Beartooth Mountains and the south face of the Big Snowy Mountains (for specific range site and vegetation information, see Climax Vegetation, SCS, 1976).

During the spring and summer of 1981 the resource area personnel conducted inventories to collect baseline soil and vegetation information for this RMP. Due to limitations in manpower and funding, the inventory was limited to areas where BLM lands are concentrated. Consequently, this inventory was confined to the larger tracts of public land in Carbon, Yellowstone and Musselshell Counties. A total of 331,725 Federal acres were inventoried in these three counties. This included approximately 2,500 acres of Forest Service land on the Pryor Mountain Wild Horse Range and about 25,000 acres of National Park Service lands in the Bighorn Canyon National Recreation Area.

The inventory was designed to update and refine existing soils information to the extent that range sites could be defined within the soil mapping units. In addition to mapping range sites, an ecological range condition was assigned to each site (see Table 3.5). This condition estimate is based on the current vegetative composition and production as compared to a comparable range site under climax or pristine conditions. Vegetative types were also identified, the canopy coverage of shrubby species was estimated, and an estimate of apparent trend was made.

TABLE 3.5: RANGE SITE/CONDITION CLASS, BY ACREAGE

5-9" Precipitation Zone

RANGE SITE	CONDITION CLASS: EXCELLENT	GOOD	FAIR	POOR
Clay Pan		50	86	
Clayey	2,309	9,155	15,195	1,707
Dense Clay		1,809	8,516	1,247
Gravel		2,509	2,035	7
Grazable Woodland			1	
Lowland		7	237	149
Overflow			22	
- Clayey		77		
Saline		4	147	93
- Lowland	18	143	244	19
- Upland		1,580	951	107
Sandy	1,475	4,650	1,684	31
- Stony		52	5	
Shallow	5,423	13,262	11,948	978
- Clay	518	4,059	2,402	71
- to Gravel		644	1,185	4
- Limy		962	4,597	2,039
- Sandy		74	84	
Silty	600	3,714	10,513	405
- Limy		537	208	4
- Limy-Stony		215	216	472
Stony	70	2,826	3,423	857
Subirrigated	17	1		
Thin Clayey	64	1,180	3,006	43
Very Shallow	2,754	6,114	1,854	854
- Limy		1,417	5,075	2,618
Wetland	6			
(Acres)	13,254	55,063	73,634	11,705

10-14" Precipitation Zone

RANGE SITE	CONDITION CLASS: EXCELLENT	GOOD	FAIR	POOR
Clay Pan	15	327	65	
Clayey	299	13,964	3,707	3
Coarse Clay		68	35	
Dense Clay		842	682	
Gravel			16	
Grazable Woodland		54	57	21
Clayey		543	132	
Sandy		955	23	
Shallow		3,165	352	
Silty		54	2	
Thin Clayey		331	12	
Thin Silty		3,748	769	
Lowland		2	27	
Overflow		200	201	
Saline		1	16	
- Lowland		145	96	
- Upland		997	151	
Sands		166	17	
Sandy	33	4,346	1,112	17
- Stony		508		
Shallow	30	6,432	1,856	95
- Clay		704	370	
- to Gravel		1,294	225	
- Limy	42	4,899	6,355	2,673
- Sandy		164	752	59
Silty	190	17,584	7,696	1,335
- Limy		254	127	21
- Limy-Stony		53		13
- Saline	3	52	34	
- Stony	3	1,499	3,883	2,566
Subirrigated		35	23	
Thin Clayey	59	6,210	1,468	3
Thin Sandy			8	2
Thin Silty	92	10,404	3,685	44
Very Shallow	6	1,435	745	173
- Limy	69	2,971	5,854	1,377
(Acres)	841	84,406	40,553	8,402

15-19" Precipitation Zone

RANGE SITE	CONDITION CLASS: EXCELLENT	GOOD	FAIR	POOR
Grazable Woodland	24	5	20	20
Sandy			10	
Sandy-Stony		26	3	
Shallow	56	132		6
Shallow-Limy	120	252	406	98
Shallow-Sandy		112		
Silty		277	454	
Silty-Stony	57	641	204	39
Thin Clayey		37		
Very Shallow	155	67		
Very Shallow-Limy	144	363	151	118
(Acres)	512	2,162	1,248	281

Summary

PRECIPITATION ZONE	CONDITION CLASS: EXCELLENT	GOOD	FAIR	POOR
5-9	13,254	55,063	73,634	11,705
10-14	841	84,406	40,553	8,402
15-19	512	2,162	1,248	281
(Acres)	14,607	141,651	115,435	20,388

Totals for all zones and classes	292,081
Acreage in crusted wheat	12,983
Rock outcrop	18,104
	323,168

Source: Ecological Site Inventory, BLM, 1981

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The overall range condition in the inventory area (exclusive of the Pryor Mountain Wild Horse Range) is 14,607 acres (5%) in excellent condition, 138,876 acres (49%) good, 102,932 acres (36%) fair, 12,488 acres (4%) in poor condition, 12,983 acres (4%) tame pasture and 6,839 acres (2%) rock outcrop (see Table 3.6).

Seventy percent of the fair and poor range condition acreage is in the 22 allotments categorized as "I" or Improve. The "I" allotments total 87,679 acres of which 6,953 acres (7.9%) are in poor condition, 36,161 acres (4.2%) are in fair condition, 35,608 acres (40.6%) are in good and excellent condition. Also 5,118 acres are in tame pasture and 3,839 acres are unsuitable rock outcrop.

The inventory of the PMWHR did not include the 6,083 acres in Big Horn County, Wyoming. Of the 38,213 acres inventoried, 2,775 acres are in good condition, 12,498 in fair, 7,900 in poor and 15,040 unsuitable to wild horse grazing.

The poor condition areas are dominated by invader species; annuals, cactus and weeds and increaser species like sagebrush, fringed sagewort and Sandberg bluegrass. Fair condition areas are dominated by increaser species but include small amounts of decreaser plants. Changes in range condition are brought about primarily by the intensity of past grazing use. Low forage production and accelerated erosion are generally associated with poor and fair range condition.

The trend in range condition and actual use have been monitored on the 24 existing allotment management plans (AMPs) and is summarized in Table 3.7. No trend information is available for other allotments.

Current problems that contribute to unsatisfactory range condition include poor livestock distribution which causes overuse of preferred areas, possible overstocking in two allotments, noxious weed invasion and season long grazing. Recent efforts have been made to balance the numbers of wild horses in the Pryor Mountain Wild Horse Range (PMWHR) with the available forage.

The range sites of the inventory area have been classified by BLM range conservationists and soil scientists as to their capability to improve in condition in response to grazing treatments of rest and deferment. The suitability for mechanical treatments has also been determined. This information is summarized in Appendices 3.3 and 3.4.

A number of factors limit the improvement potential of some of the unsatisfactory condition rangeland. Dense sagebrush (25% or more canopy cover) limits improvement on 30,000 acres. Of the total Federal acres surveyed, about 157,000 acres were of a sagebrush (*Artemesia tridentata*) aspect. Dense stands of sagebrush substantially reduce both the quality and amount of vegetative production, thus adversely affecting watershed conditions, some wildlife habitats and livestock forage. Sagebrush is very competitive for moisture and desirable grass species can't become established under dense sagebrush.

Other areas are dominated by blue grama and fringed sagewort and will not improve under grazing systems without some form of tillage to break up the sod.

In the 10-14 inch and 15-29 inch precipitation zones, the saline lowland, overflow, sandy, silty, clayey, shallow clay, thin silty, thin clayey and shallow range sites normally respond well to grazing management except when dominated by dense sagebrush or blue grama, or where high lime or stoniness is a factor. Some range sites including the dense clay, clay pan, shallow to gravel, gravel and very shallow range sites are normally slow to respond to management and are even slower if other factors (lime content, stoniness, dense sagebrush, etc.) are present. The 5-9 inch precipitation zone in southern Carbon County, which totals 132,848 BLM acres, is generally very slow to respond to management due to low rainfall. Stoniness, high lime and dense clays are additional limiting soil factors in the 5-9 inch rainfall area.

TABLE 3.6: OVERALL RANGE CONDITION

Management Category	Condition Acres E	G	F	P	Tame Pasture	Rock Outcrop	Unsurveyed	Total Acres	Authorized AUMs[1]
Custodial (C)	696	16,647	32,187	5,274	0	886	45,795	101,485	12,899
Maintain (M)	10,358	90,174	34,584	261	7,865	2,114	64,868	210,224	36,318
Improve (I)	3,553	32,055	36,161	6,953	5,118	3,839		87,679	13,220
	14,607	138,876	102,932	12,488	12,983	6,839	110,663	399,388	62,437

[1]Range Management Automated System (RMAS)

Source: Soil and Vegetation Inventory, BLM, 1981

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TABLE 3.7: ALLOTMENT MANAGEMENT PLANS

Allotment Number	Allotment Name	Grazing System	Year Implemented	Surveyed AUMs	Avg. Actual Use—AUMs	Trend
4101	Dryhead	2 Pasture RR	1975	982	389	S
4105	Gyp Springs	3 Pasture RR	1976	1133	377	S
4111	Paradise	5 Pasture RR	1974	226	100	S
4113	Bowler Upper	3 Pasture RR	1974	874	214	U
	Bowler Lower	4 Pasture RR				
4114	Crow	3 Pasture RR	1968	161	112	S
4115	Bluewash	5 Pasture RR	1973	1739	1209	U
4921	Sage Hen	3 Pasture DR	1970	278	194*	S
4941	Lake Mason	3 Pasture DR	1970	1215	305**	S
4979	Mang	2 Pasture DR	1966	245	195	S
4988	Stanley	3 Pasture DR	1973	734	—	S
5202	Cub Creek	4 Pasture RR	1976	1505	1698	S
5210	Williams Basin	4 Pasture RR	1973	997	748	S
5213	Cottonwood	3 Pasture RR	1972	733	680	S
5217	Jack Creek	4 Pasture RR	1974	536	572	U
5225	Grove Creek	4 Pasture RR	1974	1295	581	S
5302	Burk Common	3 Pasture RR	1971	389	384	U
5304	South Pompey	3 Pasture RR	1971	391	388	S
5311	Southwest End	4 Pasture RR	1967	455	265	S
5312	Central K Henry	3 Pasture RR	1973	241	226	U
5316	Buffalo Creek	5 Pasture RR	1975	449	527	S
5318	North Otis	2 Pasture DR	1972	175	101	U
5321	South K Henry	3 Pasture RR	1973	164	219	S
5348	Hawk Creek	3 Pasture RR	1974	433	383	S
5356	Hibbard Creek	4 Pasture RR	1968	692	439	U

RR — Rest Rotation DR — Deferred Rotation U — Upward S — Static

*1-year average
**Surveyed AUMs reflect some AUMs not under actual use billing.

Source: BLM, 1982

The 51 "M" category allotments in the inventory area are currently in satisfactory condition. Four allotments in southern Carbon County were placed in the custodial "C" category due to extremely low potential for improvement. The remaining 211 "C" allotments are scattered isolated tracts that were not inventoried, no data is available on current condition or potentials for these allotments.

Crested wheatgrass was planted on many of the land utilization (formerly homesteaded) tracts at the time they were reconveyed to the government. The primary objective at that time was to stabilize the soil. In the area inventoried, there were approximately 9,200 acres of crested wheatgrass and approximately 1,500 acres that had once been crested wheatgrass but is now dominated by native species. All of the above acreages occurred in Yellowstone and Musselshell Counties. Forage production could be greatly increased by tilling, haying, fertilizing or interseeding these crested wheatgrass fields.

There are major infestations of leafy spurge in Carbon and Stillwater Counties. No specific acreages are available but substantial amounts have been identified on public as well as private lands. In recent years, the BLM has been treating approximately 45 acres annually, within a 100 acre area, with Tordon herbicide.

Riparian zones are defined as a specialized form of wetland producing specific kinds of vegetation. These zones are very important for wildlife habitat, livestock grazing, streambank stabilization and water quality. There are occasional small public land tracts that border the main rivers (Yellowstone, Musselshell, Stillwater and Clarks Fork) in addition to some islands on the Yellowstone River. However, these tracts are relatively insignificant as compared to the overall riparian status. Within the "I" allotments, there are 41 miles of floodplain type that is not a riparian zone but receives occasional overflow. Common woody species include silver sagebrush, snowberry, rose, greasewood and big sagebrush. Small areas within these 41 miles have the potential for riparian vegetation.

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Threatened and Endangered Plants

Two plants currently being reviewed as threatened or endangered, and identified on the Montana Bureau of Land Management list of sensitive species, may exist within the resource area. They are *Eriogonum lagopus* (a buckwheat) and *Rorippa calycina* (a watercress). Neither has been located to date.

Livestock

Ranches holding a BLM grazing preference in this resource area are primarily cow/calf type operations. There are currently 333 operators and 62,437 active animal unit months (AUMs) (Range Management Automated System—RMAS) authorized in the resource area. Most of these AUMs are in Carbon, Yellowstone and Musselshell Counties. The total numbers of livestock authorized include 57,781 cattle, 22,388 sheep and 133 domestic horses. These figures indicate the amount of livestock dependent on public lands at some time during the year. Livestock productivity varies widely within the resource area depending on the management program of the operator, breeds used and range conditions.

The demand for currently allocated forage appears to be relatively stable. Additional demand seems to follow cattle price cycles, increasing when prices are up and vice versa. At the time of adjudication in the 1960's, those AUMs of priority in excess of the surveyed capacity were held in suspended-nonuse. There are 7,785 AUMs currently carried as suspended-nonuse.

Grazing Management

The 1981 Ecological Site Inventory, described in the Vegetation section of this chapter, was designed to update and refine existing soils information to the extent range sites could be defined within the soil mapping units. In addition to mapping range sites, an ecological range condition was assigned to each site (see Table 3.5). This condition estimate is based on the current vegetative composition and production as compared to a comparable range site under climax or pristine conditions. Vegetative types were also identified, the canopy coverage of shrubby species was estimated and a cursory estimate of trend was made.

The information collected during this inventory will be used to implement the BLM Grazing Management Policy, which directs the Bureau to adopt a selective management approach. Selective management will be based on identification of allotments or areas sharing similar resource characteristics, management needs and the potential for resource and economic improvement. Similar allotments will be identified as belonging to one of three categories for which BLM's objective is to: maintain "M" their current satisfactory condition; improve "I" their current unsatisfactory condition or manage the allotments custodially "C" while still protecting existing resource values. Final categorization resulted in 156 allotments in the "M" category, 22 in the "I" category and 215 in the "C" category.

There are currently 24 implemented allotment management plans within the resource area (see Appendix 1.8). Most were implemented in the late 1960's and early 1970's and the oldest of these has completed five grazing cycles. Of these 24 AMPs, 19 are rest rotation and the remainder are deferred rotation. Approximately 35% (154,629 acres) of the public lands administered by the BLM within the resource area are under implemented AMPs. Generally, these AMPs are meeting the objectives set forth in the plans. Six of these AMPs fall into the "I" category and will require revisions. The remaining 16 are in the "M" category and will maintain the current situation.

The three areas in the resource area where vegetative manipulations should occur are areas containing dense stands of sagebrush, crested wheatgrass and noxious weeds (primarily leafy spurge). The 1981 inventory also resulted in mapped vegetative communities and estimated shrub canopy coverage. Where shrubs occurred, they were grouped into one of three categories: 05%, 5-25% or 25+% canopy coverage. Of the total Federal acres surveyed, about 157,000 acres were of a sagebrush (*Artemesia tridentata*) aspect. About 30,000 acres of these public lands had a canopy coverage in excess of 25% (Ecological Site Inventory, 1981). Dense stands of sagebrush substantially reduce both the quality and amount of vegetative production, thus adversely affecting watershed conditions, wildlife habitat and livestock forage.

Crested wheatgrass had been planted on much of the BLM acquired lands (land formerly homesteaded and then bought by the government under the Bankhead-Jones Act of 1937). The primary objective for this was to stabilize the soil. The area inventoried contained approximately 9,200 acres of crested wheatgrass and approximately 1,500 acres that had once been crested wheatgrass, but is now dominated by native species. All of the above acreages occur in Yellowstone and Musselshell Counties.

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Another area where vegetative manipulation could occur is where noxious weeds occur. Currently, leafy spurge is the dominant weed problem in the Billings Resource Area. The major infestations are in Carbon and Stillwater Counties. No specific acreages are available, but substantial amounts have been identified on public as well as private lands. In recent years, the BLM has been treating approximately 45 acres annually with Tordon.

Timber Management

There are approximately 14,225 acres of BLM managed timber throughout the Billings Resource Area. This timber is found primarily in the Pryor, Beartooth, Bull and Snowy Mountains.

The commerical saw timber species present within the resource area, in order of abundance, are ponderosa pine, Douglas fir, lodgepole pine, Engelmann spruce and alpine fir (see Table 3.8). Stands vary in age and size from young reproduction timber (less than 10 years old) to over mature saw timber (200 years or more old).

Altitude generally dictates the type of timber overstory present. The most common species of river and streambank overstory vegetation are cottonwood and willow. Juniper, interspersed with ponderosa pine, is found at lower elevations. Quaking aspen, growing in the more mesic areas, is found at mid and high elevations. Conifer species, including ponderosa pine, Douglas fir, lodgepole pine, Engelmann spruce and alpine fir, are generally found at mid to high elevations.

The western spruce budworm has infested portions of the Billings Resource Area. Douglas fir trees of all ages in the Pryor Mountains and in areas south of Big Timber, Montana are being destroyed by the insect. The mountain pine beetle is also present. It infests and kills ponderosa pine and lodgepole pine. However, there are no presently known epidemic populations on BLM-administered lands.

TABLE 3.8: COMMERCIAL SAW TIMBER SPECIES

COMMON NAME	SCIENTIFIC NAME
Engelmann spruce	Picea engelmannii
Alpine fir	Abies lasiocarpa
Ponderosa pine	Pinus ponderosa
Douglas fir	Pseudotsuga mengiesii
Lodgepole pine	Pinus contorta
Limber pine	Pinus flexiius
Quaking aspen	Populus tremulsides
Juniper	Juniperus spp.
Cottonwood	Populus spp.
Willow	Salix spp.

Source: The Textbook of Dendrology, 1958

Much of the BLM timber in the resource area, with the exception of the Twin Coulee Wilderness Study Area (WSA), is located on small, isolated tracts lacking public access. In most cases, the tracts do not contain timber of sufficient quantity and quality to make advertised sales necessary, except for the 4,612 acres of productive forest in the Twin Coulee WSA.

Given the existing land pattern, the lack of public access and small volume of timber products available in these tracts, the most effective way to conduct a forestry disposal program in the resource area is by negotiated sales. A timber buyer, logging private timber adjacent to BLM managed land, already has access roads and can afford to buy a small BLM sale (less than 50 thousand board feet) without additional move-in expenses. Advertised timber sales would be the exception rather than the rule.

Table 3.9 describes the timber sales in the Billings Resource Area since 1977.

TABLE 3.9: FOREST PRODUCT SALES SINCE 1977

Product	Number of Sales	Units	Value
Saw Timber	10	259 MBF	$7,269.00
Posts and Poles	5	2,700 ea.	214.00
Christmas Trees	1	100 ea.	40.00
Firewood	3	20 cords	10.00
TOTALS	19		$7,533.00

Source: BLM, 1982

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WILD HORSES

The Pryor Mountain Wild Horse Range was created by order of Secretary of the Interior, Stewart L. Udall on September 9, 1968 (see Figure 3.7). As a result, the area is administered primarily for the protection and management of wild horses, wildlife, watershed, recreation, archeological and scenic values. See Appendix 3.5 for the agreement between Montana and Wyoming BLM for the administration of the horse range. The designation directs that management of the wild horses and their habitat be within a balanced program which considers all public values without impairment to the productivity of the land (*Federal Register* Notice, September 12, 1968, Vol. 33, No. 178).

At the present time, the rangeland available for wild horse use consists of 36,600 acres of designated wild horse range and 7,696 acres of undesignated land; a total of 44,296 acres. This total includes Federal, state and privately-owned lands critical to the management of the wild horses.

Upon designation, BLM constructed several improvements on the range to facilitate wild horse management. An outer boundary fence was constructed, water traps have been built, older traps have been maintained and extended, and corrals built at Britton and Sykes Springs. The water facilities developed include a pipeline on Layout Creek, two water catchments and two springs. These developments set the stage for the existing wild horse management program.

When the PMWHR was designated in 1968, it contained about 200 wild horses. When the Wild Horse and Burro Act passed on December 15, 1971, the range contained over 200 horses. There are now about 130 horses on the range. Updated inventory data and grazing capacity information suggest that the wild horse range will support 121 wild horses on three separate herd areas: the Dry Head area, the Sykes Ridge area and the Tillett Ridge herd area (see Figure 3.7). This population figure is the total number of horses on the PMWHR at the beginning of the winter grazing season. Approximately 80% of these horses will be 2 years old or older. The grazing capacity estimates by herd area include 31 head on the Dry Head area, 44 head on the Sykes Ridge area and 46 head on the Tillett Ridge area. These numbers represent total horses without differentiation between age, class or sex. Grazing capacity was determined using current range condition inventory information and applying the Soil Conservation Service (SCS) stocking rate guides to each range site and condition class. One horse requires 1.25 AUMs.

The 1981 Ecological Site Inventory indicated that 2,775 acres were in good range condition; 12,498 in fair; 7,900 in poor condition; 15,040 are unsuitable for wild horse grazing.

The current production of the area available to wild horses is 1,458 horse animal unit months and will support 121 horses yearlong. The potential production is 2,146 horse AUMs which would support 179 horses.

These figures indicate that the range has been severely grazed by horses in the past, resulting in less than satisfactory soil and vegetative condition. For this reason there are less horses on the range now than when established in 1968.

Beginning in 1971, capture and excess operations were conducted to bring the horse number down to carrying capacity. In addition, a severe winter death loss in the winter of 1977-78 caused a natural reduction in numbers. These actions resulted in the current population of 130 wild horses.

The current sex ratio is 2:1, favoring females. Fifty-three percent of the horses are 4 years or younger, with a uniform age-class distribution of horses older than 4 years. The reproduction rate is about 25% of the total population, annually.

Not all of the environment used by wild horses is designated a part of the PMWHR. The Lost Water Canyon area of the Custer National Forest, the Sorenson extension area of the Bighorn Canyon National Recreation Area, and the Mystic allotment, controlled by private interest, are other areas available for grazing by wild horses (see Figure 3.7). The continued availability of these areas is dependent on the proper management of wild horses, including population control. The use of these lands is by agreement or lease arrangements and is subject to revocation at any time. These privately-owned areas amount to about 754 AUMs.

Even though the country is rough, horses travel great distances to existing water sources. As a result, grazing use around present water sources is heavy.

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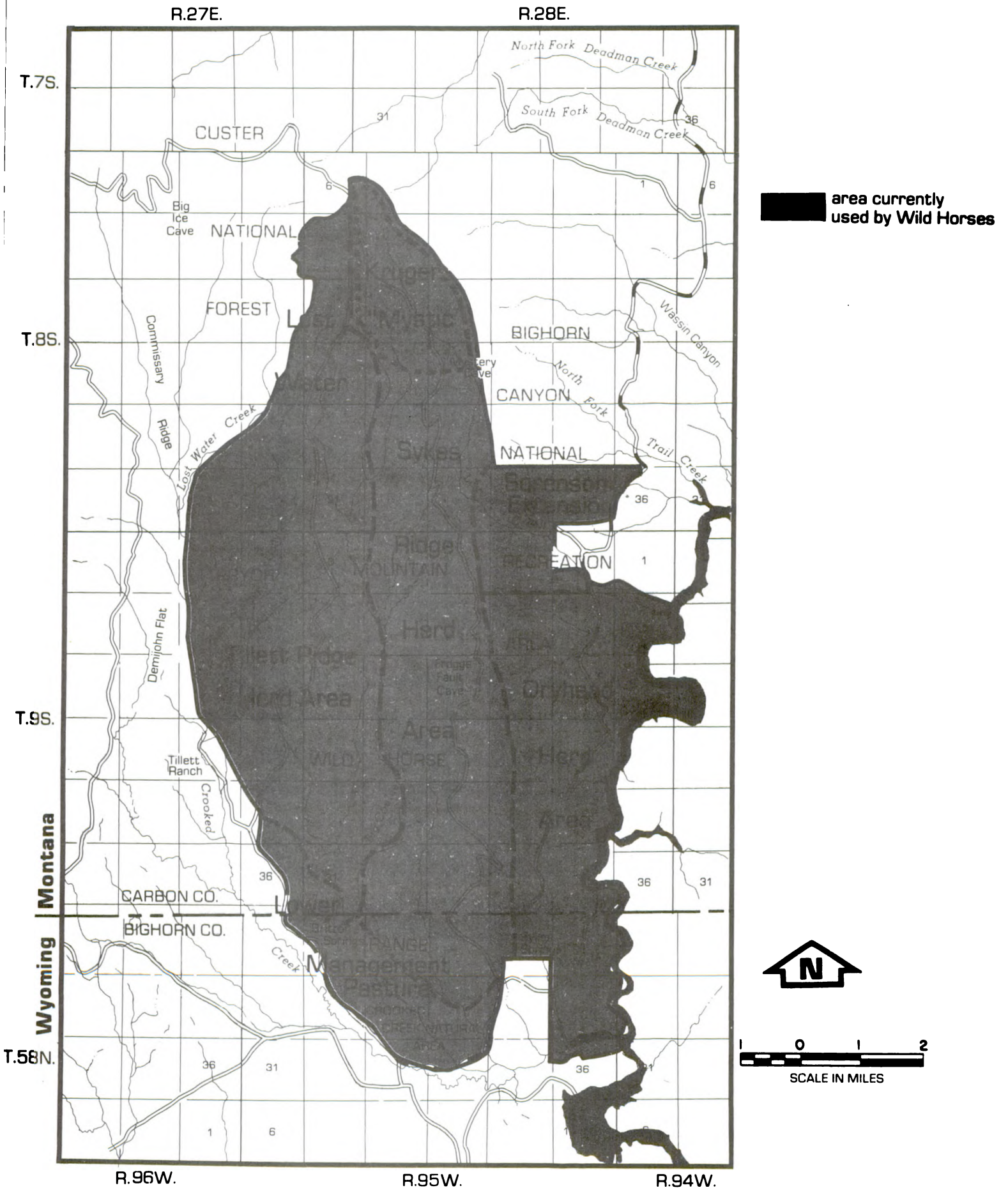
Figure 3.7: Area Currently Used by the Pryor Mountain Wild Horses



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The availability of water on the horse range is limited due to low rainfall. Two existing man-made water catchments add to the natural water sources and help to disburse the horses. Water right applications have been filed on these catchments, but no permits have yet been issued.

The general public has shown interest in the PMWHR and management of the wild horses. Five signs (three on BLM-administered lands and two within the Bighorn Canyon National Recreation Area) indicate the boundary of the horse range. A film shown by Park Service personnel at the National Park Service Visitor Center in Lovell, Wyoming is the only interpretation of wild horses and the PMWHR.

The resource area has an approved activity plan, "Winddrinker Overlook", that constitutes a substantial development for wild horse viewing. This plan has considerable public support in the town of Lovell, Wyoming located approximately 13 miles south of the proposed site.

WILDLIFE

Public lands within the Billings Resource Area provide all or significant portions of habitat types required by a very diverse array of wildlife species. Vegetative types such as grassland, grassland-shrub, shrub, deciduous woodland, coniferous forest, riparian and agricultural lands and special habitat features such as cliffs, snags, springs, natural potholes, reservoirs, lakes and islands are represented in the Billings Resource Area. Maintenance of these habitat types is critical to the continued existence of diverse, viable populations of wildlife. The Federal Land Policy and Management Act of 1976 recognized wildlife habitats as one of the public land's many valuable resources and chartered BLM with the responsibility of maintaining or enhancing habitat conditions through the land use planning process.

The wildlife occurrence map in the map pocket portrays the general distribution of key game species found within the resource area. Detailed overlays displaying crucial habitat areas and a listing of known or potential game and nongame species which may occur within the resource area is available for review in the Billings Resource Area office.

For discussion purposes, this resource management plan/environmental impact statement (RMP/EIS) will place emphasis on identifying and analyzing potential impacts on those species whose populations or habitats could be affected by one or more of the land use proposals contained in this document. Species with limited populations or known crucial habitat areas will be given special consideration in the evaluation of impacts presented in Chapter 4 of this document. Table 3.10 summarizes the known habitats within the resource area and provides the percent which occurring public lands.

Big Game

Deer

Mule and white-tailed deer are the most widely distributed big game species and occupy the greatest variety of habitat types. Mule deer are most abundant in the coniferous forest areas and the rough, broken side slopes of drainages and mountain foothills. However,

TABLE 3.10: WILDLIFE HABITAT STATISTICS

Description	Total-All Ownership	Federal Ownership	%
Mule Deer Winter Concentration Range	339,150 acres	51,800 acres	15.3
Antelope Winter Concentration Range	439,750 acres	119,300 acres	27.1
Elk Winter Concentration Range	160,500 acres	1,500 acres	1.0
Chukar Yearlong Range	90,000 acres	75,000 acres	83.3
Turkey Yearlong Range	29,000 acres	1,760 acres	6.1
Prairie Dog Colonies (Whitetail and Blacktail)	7,500 acres	2,000 acres	26.7
Sage Grouse Mating Grounds (Number)	110 each	28 each	25.5
Sharptail Grouse Mating Grounds (Number)	60 each	17 each	28.3

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they have also been sighted in upland areas where sagebrush is the dominant shrub (BLM Observation Reports). Their utilization of trees, shrubs, forbs and grasses varies seasonally and is generally associated with the availability of the various plant communities (U.S. Fish and Wildlife Service [USFWS], 1978). Approximately 339,000 acres of mule deer winter range are identified in the resource area of which 51,800 acres (15.3%) are on public land. In addition to this, approximately 1,960 acres of mule deer yearlong range overlays Federally-owned coal reserves/privately-owned surface which is being carried forward for lease consideration pending further study and final application of the coal unsuitability criteria in the Bull Mountain coal field. The Bureau of Land Management will be required to make mitigation and/or reclamation recommendations for these areas should any development occur.

In the spring, deer typically feed extensively on succulent green grasses until forbs become available. They will use forbs, supplemented by some browse throughout the summer and turn heavily to the use of browse in the fall, winter and early spring. Hiding and thermal cover is important in maintaining deer populations. Woody vegetation is important in reducing the effects of weather and providing adequate concealment. Without adequate cover, fawns are susceptible to predators and bad weather. Deer also use woody vegetation for bedding cover during the heat of the day and at night (Julander, 1966; and Swank, 1958). During severe winters, private agricultural lands play an important role in the maintenance of certain populations. These lands can be severely damaged due to overutilization.

White-tailed deer are not as widely distributed in the resource area and tend to occupy drainage bottoms where riparian vegetation is abundant. Their dietary preference and cover requirements are very similar to those of mule deer and are generally dictated by availability (USFWS, 1978).

Antelope

Antelope habitat and populations are abundant and widely distributed throughout the resource area. They use a variety of vegetative types throughout the year depending on availability, palatability and succulence (USFWS, 1978). The most commonly used vegetative types are the grassland, grassland-shrub, shrub and agricultural lands (BLM Observation Reports). Browse, primarily sagebrush, constitutes a very large portion of yearlong forage, and is usually used the most during the fall and winter seasons. Seasonal forbs are then used through the summer and early fall (USFWS, 1978). Crucial winter habitat includes sagebrush and shrubs between 12-24 inches in height, especially during periods of heavy snow cover. In the spring, succulent green grasses are used until forbs become available.

Approximately 440,000 acres of antelope winter range are identified in the resource area of which 119,300 acres (27.1%), are on public lands. Vegetative cover is also necessary for fawning as it protects the young from predators and severe winters (Autenrieth, 1978). Sagebrush, 12-24 inches in height with 20% canopy cover generally located in a basin type of topography, will adequately meet this particular need (USFWS, 1978).

Elk

Small, isolated elk herds occur in the Bull, Snowy and Pryor Mountains. The heaviest habitat use occurs in the ponderosa pine, grassland, grassland-shrub and agricultural areas. The ponderosa pine areas appear to be most significant, providing resting areas, escape and thermal cover.

The Bull Mountain elk herd showed a heavy seasonal dependence on grasslands, ponderosa pine and agriculture lands. The changing seasons of the year change the degree of dependency on these vegetative types and would include the use of the grassland shrub type during the winter (Dusek, 1978). Approximately 160,000 acres of elk winter range have been identified in the resource area of which 1,500 acres (1%), are on public lands. Also of concern are approximately 1,680 acres of winter range which overlies Federally-owned coal reserves/privately-owned surface which is being carried forward for lease consideration pending further study and final application of the coal unsuitability criteria. The BLM will be required to recommend mitigation and/or reclamation of these habitat areas should development occur.

Little information is currently available on the movements and subsistence habits of the Pryor Mountain herd. Most, if not all of their movement is confined to the Custer National Forest portion of the Pryor Mountains.

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Black Bear

Black bear occur in the Pryor and Big and Little Snowy Mountains. They occur primarily in heavily forested and intermittent hardwood areas (BLM Observation Reports). These dense stands of timber provide them with excellent escape cover as well as denning and feeding sources. During the winter, they seek hollow trees, caves or cliff overhangs for hibernation. The young are born while the female is still in the den.

The black bear is omnivorous and eats plant material such as berries, roots, carrion and an occasional fresh mammal kill (USFWS, 1978).

Bighorn Sheep

Rocky Mountain bighorn sheep are found in the Pryor Mountains. The resident herd is estimated at 10 to 20 individuals (BLM Observation Reports). They generally inhabit the very rough, steep rocky ridges bordering grassland, grassland-shrub and forested areas (BLM Observation Reports). Grasses and forbs provide the major portion of the species yearlong diet which is supplemented with browse types such as curlleaf mountain mahogany and sagebrush (USFWS, 1978). Little information is currently available on the migratory routes of this herd.

Upland Game Birds

Sage Grouse

Sage grouse are the most widely distributed and abundant game bird species on public lands. They are primarily associated with sagebrush communities in grassland-shrub and shrub vegetation types. Sage grouse prefer sagebrush for cover and food with a canopy coverage greater than 15%. They eat only soft material because of their lack of a muscular gizzard (Patterson, 1952). Their diet is comprised primarily of sagebrush, especially during the fall and winter months. However, in the spring, forbs become an important part of the diet for both adults and juveniles. Nesting habitat is located under sagebrush, usually within 2 miles of mating grounds (Wallestad and Pyrah, 1974; Martin, 1970; Gill, 1965). Approximately 110 mating grounds have been identified in the resource area, of which 28 (25.5%) are on public land. The tallest and most robust sagebrush in the stand is generally used, ranging from 6.6 to 31.6 inches with canopy cover between 20-50% (Wallestad and Schladweiler, 1974; Wallestad and Pyrah, 1974).

Sharp-tailed Grouse

This species is widely distributed in the resource area, and are generally found in the grassland, grassland-shrub and woodland vegetation areas. Females nest and raise their broods in the grassy uplands usually within 1 mile of mating grounds. Approximately 60 mating grounds are identified in the resource area of which 17 (28.3%) are on public lands. During the winter, a major portion of their diet consists of insects and twig tips of various trees and shrubs. In the spring, there is a major shift to greens such as grasses, flower parts, clover, forbs and cultivated grains (Johnsgard, 1973). In the summer, insects are utilized heavily and supplemented with leaves from succulent plants, dry seeds and fleshy fruits (Edminster, 1954). In the fall, their diet shifts again to grasses, seeds, cultivated grains and the fruits of various trees and shrubs (Johnsgard, 1973).

Pheasants

Pheasants are generally found where there are grain crops and weeds for food, and woodland and riparian habitat for cover (Janson, et al., 1971). Cattail and bulrush in wetlands also provide additional escape and winter cover. In spring and summer, green grasses and forbs provide food for the adult birds. Chicks primarily eat insects for their first 4-6 weeks before changing to vegetation. Small grains and weed seeds are heavily utilized during the fall and winter seasons (USFWS, 1978).

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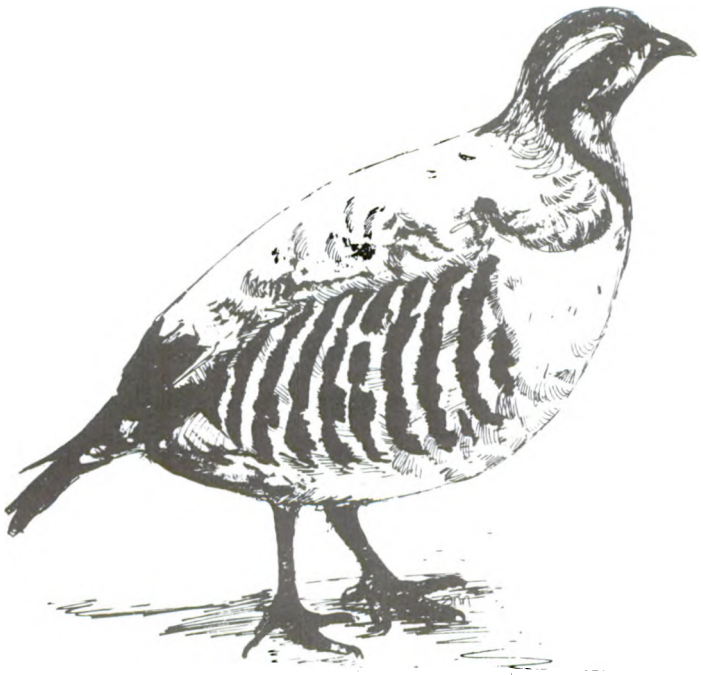


Waterfowl

Waterfowl use, both migratory and yearlong, occurs throughout the resource area. The most intensive use occurs in the northern and westcentral portions of the resource area, where an abundance of reservoirs and lakes such as Halfbreed and Big Lake, exist for resting and nesting. The Yellowstone and Clarks Fork drainages are used heavily by Canadian geese and some species of ducks for nesting purposes. Nesting occurs mostly on established islands and brushy wetland and riparian areas where abundant cover provides escape and protection from predators. Studies show a 60% occupancy of geese on reservoirs with islands versus 2% on reservoirs without islands (Eng, et al., 1978). Many studies have documented the relationship of high quality nesting cover to nesting ducks. If good shoreline cover is available, nesting pairs are attracted to the pond (Eng, et al., 1978). Approximately 463 reservoirs exist in the resource area which could produce 8,334 ducks annually (Prairie Potholes Habitat Management Plan, 1978).

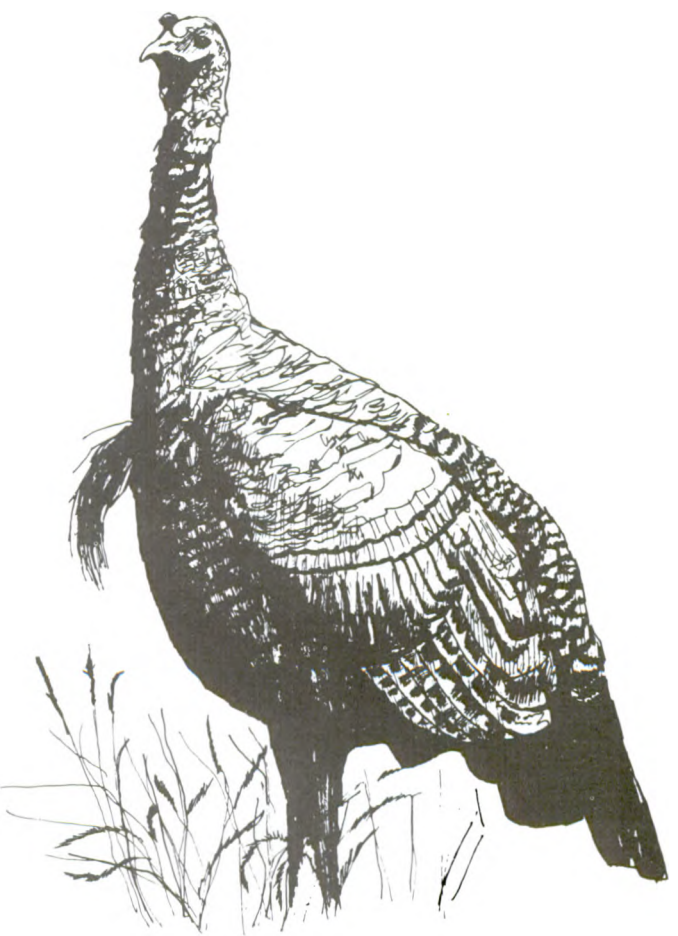
Chukar Partridge

These birds are found primarily in the southern portion of the resource area in the grassland, grassland-shrub vegetative areas where sagebrush and cheatgrass are abundant (BLM Observation Reports). Approximately 75,000 acres (83.3%) of potential habitat are identified on public lands.

Chukar partridge prefer brushy slopes and draws for most activities, and grain fields where available, are used for feeding purposes. They are heavily dependent upon free water sources and will cluster around these sources during periods of drought. In the spring, chukars feed on green leaves of grasses and forbs. During the summer, they expand their diet to include available seeds and insects. During the fall, if available, fruit such as chokecherry are used. During the winter months, they rely heavily upon available seeds and leaves of grasses and forbs (Game Management in Montana, 1970).

Turkey

Turkey can be found in the Bull and Snowy Mountains. In the spring, they use the ponderosa pine, grassland and agricultural vegetative types for food and cover. During the summer, turkeys inhabit grasslands. Fall and winter observations indicate heaviest use of the grassland and ponderosa pine areas, since ponderosa pine are extremely important as escape cover and roosting sites (Dusek, 1978). Approximately 29,000 acres of turkey yearlong habitat are identified in the Bull Mountains, of which 1,760 acres (6.1%) are on public lands. An additional 1,960 acres of this yearlong habitat overlies Federally owned coal reserves over privately owned surface which is being carried forward for lease consideration pending further study and final application of the coal unsuitability criteria which will require mitigation and/or reclamation should development occur.



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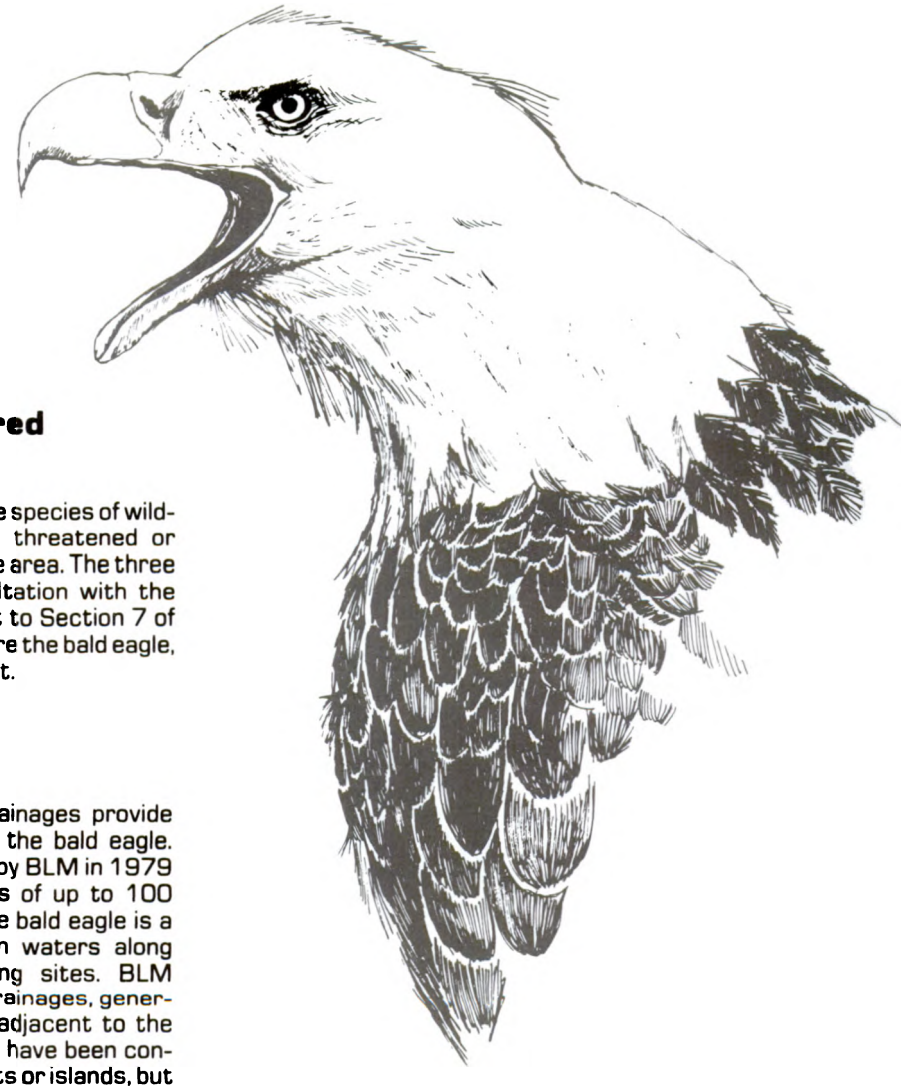

Threatened and Endangered Species

Historical and potential habitat for three species of wildlife which are Federally classified as threatened or endangered, occurs within the resource area. The three species, as confirmed through consultation with the U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act of 1973, are the bald eagle, peregrine falcon and black-footed ferret.

Bald Eagle

Yellowstone and Clarks Fork River drainages provide major winter concentration areas for the bald eagle. Winter aerial flight surveys conducted by BLM in 1979 and 1980 documented concentrations of up to 100 individuals along the two drainages. The bald eagle is a frequent carrion feeder and the open waters along these rivers provide excellent feeding sites. BLM ownership is very limited along these drainages, generally confined to small isolated tracts adjacent to the river or islands. No active nesting sites have been confirmed recently on the Federal land tracts or islands, but numerous sightings of roosting eagles have been documented. BLM will continue to protect these sites from land use proposals which may adversely affect the habitat or species of concern residing in the area.

Peregrine Falcon

Information pertaining to peregrine falcons within the resource area is quite limited. However, confirmed sightings in recent years near Broadview, Montana, verify their existence. No active nesting sites have been located on public lands to date. The abundance of rocky cliffs and outcrops used for roosting and nesting purposes associated with the large expanses of open grassland and grassland shrub vegetative types preferred by prey species offer excellent potential habitat for the birds. Historically, peregrine falcons inhabited the Bighorn Canyon/Pryor Mountain area. BLM is continuing to survey and evaluate these areas with the intent to select and propose sites for potential reintroduction in support of the peregrine falcon recovery plan.

Black-footed Ferret

There have been no recent confirmed sightings of the black-footed ferret within the resource area. Ferrets are generally closely associated with active prairie dog colonies. There are approximately 7,500 acres of active prairie dog colonies within the resource area, of which an estimated 2,000 acres (27%) are located on public lands. BLM is continuing to survey and monitor prairie dog colonies on public land for the occurrence of ferrets. Additionally, each prairie dog town is being evaluated to document the suitability for introduction of black-footed ferrets utilizing criteria outlined in the Black-footed Ferret Recovery Plan as guidance.

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Furbearers

The most abundant terrestrial furbearers in the resource area are the bobcat, lynx, red fox and coyote. Aquatic species include the beaver, mink and muskrat.

Nongame Animals

Numerous nongame mammals, birds, and reptiles occur within the resource area. Some species of interest, due to uniqueness or special habitat requirements, include the golden eagle, osprey, prairie falcon, merlin, long-billed curlew, burrowing owl, mountain plover, black-tailed prairie dog and white-tailed prairie dog. These species receive special management consideration in all phases of the land use planning process for maintenance or enhancement of their respective habitats.

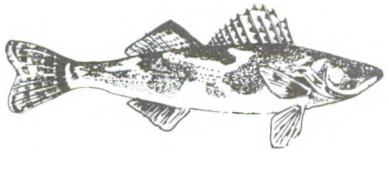
Fisheries

Fisheries within the resource area are varied, but primarily confined to the Musselshell, Yellowstone and Clarks Fork River drainages and their associated tributaries. Three perennial creeks, Sage Creek, Crooked Creek and Bluewater Creek originate in the Pryor Mountains. All of these perennial waters support active sport fisheries.

The primary game fish found in the major drainages include rainbow trout, brown trout, mountain whitefish, sauger, ling, walleye, channel catfish, black crappie, smallmouth bass and yellow perch. The smaller, cool water tributaries support populations of brook and cutthroat trout.

Approximately 30 miles of BLM-administered public lands are located along these drainages and associated tributaries. Most are less than 1 mile in length and, as such, do not lend themselves to management options that could greatly benefit the existing fishery.

The most abundant nongame fish includes longnose dace, mountain sucker, longnose sucker, mottled sculpin, stonecat, short-head redhorse, river carpsucker, flathead chub, black bullhead, goldeye, smallmouth buffalo, carp, lake chub, plains minnow, silvery minnow and fathead minnow (Brown, 1971).



LANDS

Lands managed by BLM acreages are identified (on BLM recreation maps) as public lands (PL), land utilization (LU) lands, other and subsurface. Public lands have always been under Federal management. Land utilization lands were in private ownership at one time but were purchased through the Bankhead-Jones Farm Tenant Act of 1937. This act allowed farm families to sell their homesteads at their option, and start again during this financial crisis. Lands classified as "other" have been withdrawn from multiple use management for possible use as power sites, stock driveways, etc. Subsurface acres are those where the Federal Government reserved the mineral rights.

The following is a breakdown by county of PL, LU, "other" and subsurface acres in the resource area. The surface figures were obtained from Form 1165-4, "Public Lands Under Exclusive Jurisdiction of the BLM, fiscal year 1981" at the BLM Montana State Office. The subsurface figures are from the files at the Billings Resource Area Office.

Acreages of the Billings Resource Area:

Carbon County

PL—204,565
LU—None
Other—2,583
Subsurface—326,881.67

Golden Valley County

PL—8,195
LU—None
Other—80
Subsurface—43,780.83

Wheatland County

PL—2,195
LU—None
Other—None
Subsurface—22,340.68

Musselshell County

PL—15,186
LU—89,500
Other—None
Subsurface—253,030.37

Yellowstone County

PL—15,180
LU—70,693
Other—None
Subsurface—126,093.41

Big Horn County

Subsurface—501.08

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Stillwater County

PL—4,049
LU—None
Other—1,641
Subsurface—58,474.52

Sweet Grass County

PL—15,773
LU—None
Other—793
Subsurface—74,982

Total:

PL and LU—425,336 acres
Other—5,097
Subsurface—906,084.56

With the exception of the Pryor Mountain area and the Bridger, Warren, Belfry Triangle Area, public land tracts in this resource area are scattered and isolated (see Map 1—Map Pocket). There have been previous attempts to consolidate or dispose of these tracts in Golden Valley and Wheatland Counties.

Land Tenure Adjustment

An inventory of the 36,156 acre Land Tenure Adjustment area placed these public lands in three categories. The Land Tenure Adjustment area is located along the Yellowstone and Stillwater Rivers and an area north of Billings (see Map 1—Map Packet). After applying the disposal and retention criteria (see Appendix 1.3), and following public input, the tracts were placed in the following categories: 7,459 acres available for disposal; 26,314 acres for retention; and 2,382 acres for further study. Appendix 1.6 shows the legal descriptions of the tracts within this area.

Also following public input, the remainder of the resource area was zoned into either retention or disposal zones. Approximately 42,350 acres of public land are located in disposal zones, while 364,350 acres remain in the retention zones. An additional 10,150 acres of public land were identified as suitable for possible exchange to the U.S. Forest Service, and would therefore not leave public ownership.

The total acreage identified for possible disposal by sale, exchange, or other authorized means is approximately 49,809 acres.

Classifications

Portions of the Pryor Mountain area, including most of the PMWHR, have been classified for retention under the Classification and Multiple Use (C&MU) Act of 1964. These lands, approximately 28,586 acres, have been further segregated from appropriation under the agricultural land laws, from sales under Section 2455 of the Revised Statutes, and from operation of the general mining laws, but not from the mineral leasing laws.

The Federal Land Policy and Management Act of 1976 repealed some of the agricultural land laws and Section 2455 of the Revised Statutes. The only agricultural land laws remaining are the Desert Land Entry and the Carey Act.

Washington Office directive dated June 18, 1981 (see Appendix 1.7 OAD No. 81-11), has instructed that all C&MU classifications be examined and if possible revoked by the end of fiscal year 1983. The C&MU classifications on the Billings Resource Area were reviewed and revoked in September 1983.

RECREATION

The major forms of recreation on public lands in the Billings Resource Area include hunting, fishing, river floating and off-road vehicle (ORV) use. General recreation uses include hiking, camping, picnicking, spelunking, horseback riding, cross-country skiing, snowshoeing and sledding.

Hunting is conducted primarily for deer, pronghorn antelope, upland birds and waterfowl. Due to the scattered landownership pattern, the number of hunter days spent on public land in the Billings Resource Area is not known, however, the interest and trend continues to increase.

Fishing is primarily stream fishing with a variety of species available. The use of BLM fishing waters cannot be quantified because of the limited ownership. However, 200 visits were recorded at Hamilton's Point, a fishing access area east of Roundup, from May 1 to October 1, 1981. It also appears spring use in 1982 was higher than in 1981.

Off-road vehicle use is generally well dispersed throughout the area. However, several areas require special ORV regulations in order to reduce conflicts with adjacent landowners and protect resource values.

The South Hills area is located 2 miles south of Billings, east of the Blue Creek Road, and consists of 1,200 acres of public lands adjacent to an expanding housing development. In order to reduce conflicts, the BLM informally closed a 70 acre portion of the area near the subdivision to ORV use in April 1982.

Off-road vehicle restrictions have been in effect in the Pryor Mountain and the Acton area to protect other resources. The BLM managed portion of the Pryor Mountains is located approximately 70 miles south of Billings and consists of 92,000 acres. In July 1979, 52,000 acres were designated as limited to specific roads and trails and 40,000 acres were designated open to ORV use. The Acton area is located 13 miles northwest of Billings and consists of 3,800 acres. Off-road vehicle use was designated as limited to specific roads and trails in July 1980.

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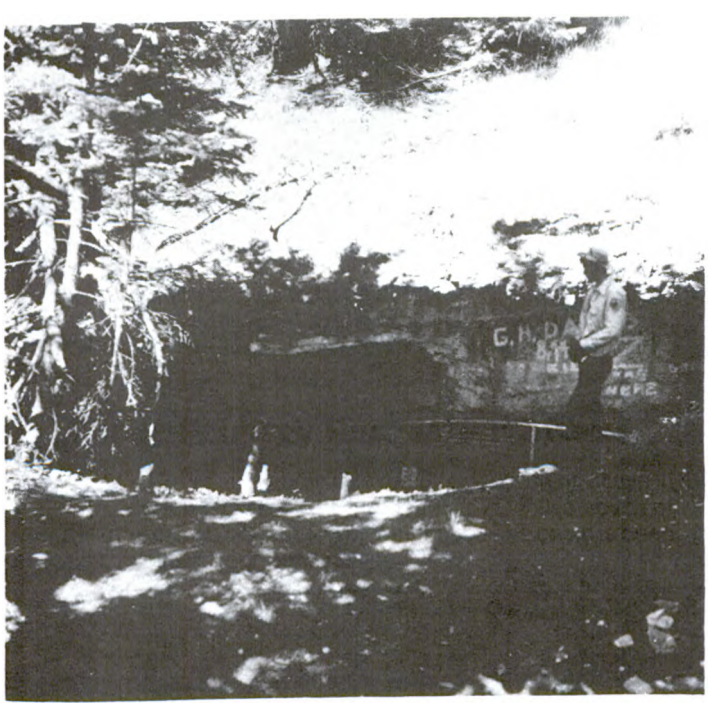
Other Primary Recreation Sites

Penn's Cabin, a popular site used for overnight stays in conjunction with recreational use, is 70 miles south of Billings on top of East Pryor Mountain. The cabin is open to the public year around.

Penn's Cabin

Mystery Cave is located 70 miles south of Billings in the Pryor Mountains. It's one of the more spectacular caverns on BLM lands in Montana. The BLM's cave management policies do not allow indiscriminate entrance into Mystery Cave without a BLM guide. It is therefore closed from November through May. Bureau of Land Management guided tours can be provided throughout the remainder of the year upon request. Because of the fragile nature of the cave, a large increase in use could not be sustained without creating resource damage.



Mystery Cave

The Billings Resource Area manages an environmental education site consisting of 77 acres, north of Shepherd, Montana. This Shepherd Ah-Nei area is used by Billings school children for field trips and outdoor educational experiences. Developments at the site include trails, signs, parking areas and comfort stations. Because of the increased cost of transportation, organized school use has decreased significantly in recent years.

Shepherd Ah-Nei Environmental Education Site

A potential environmental education site exists 13 miles northwest of Billings near the community of Acton. It is not currently being utilized for environmental education purposes.

Visual Resource Management

Visual resource management is also a function of the BLM's recreation management program. Visual resources are a consideration before developments or activities which might impair scenic qualities can occur. Visual resources are generally considered of high quality throughout the resource area. The glossary provides a definition of BLM visual resource classifications.

Approximately 200,000 acres of public land in the resource area were inventoried for the purpose of assigning visual resource management classes. This included all of Musselshell and a portion of Yellowstone County, northeast of Billings. Visual management classes assigned consisted of Class II (good—35% of area), Class III (medium—30% of area) and Class IV (poor—35% of area).

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CULTURAL RESOURCES

Information about cultural resources in the Billings Resource Area has been collected from the Lewistown District Class I Inventory, office files, inventory reports, communication with local members of the Montana Archeological Society and clearance reports for range, oil and gas undertakings. Although the data is quite general and primarily concentrated within the Pryor Mountain area, it has provided some insight about the types, quality, number and distribution of cultural resources currently known in the Billings Resource Area.

There are 1,262 sites recorded on BLM, state, Crow Tribal and private lands within the resource area. These prehistoric and historic sites represent human occupation during the past 12,000 years. Prehistoric sites are of the following types: lithic scatters, hearths, tipi rings, conical pole and cribbed log structures, rockshelters, caves, rock art, vision quests, fortifications, cairns, rock alignments, medicine wheels, quarries, burials and bison kills. Historic sites are represented by the remains of homesteads, historic trails, trading posts, abandoned coal mines and debris from early oil and gas activities (see Table 3.11). Lithic scatters comprise the majority of prehistoric sites on BLM land within the resource area, and tipi ring sites, hearths and fire-cracked rock and rock art are the next most common sites.

The distribution of prehistoric sites in the resource area varies according to environmental zones and topographic features. The figures in Table 3.12 indicate the site distribution for each environmental zone as determined from cultural resource inventory reports and professional judgment. The sites in all environmental zones tend to be associated with topographic features such as stream terraces, canyon walls, ridges, cuestas and escarpments. The occurrence of water in streams, springs and small lakes is a significant factor in site distribution. Invariably, the most important sites (major habitation and subsistence types) tend to be situated where water, food, fuel and shelter could be found in the past.

Homestead remnants are the most common historic site type in the resource area. An ongoing study of homesteading in Montana funded by the Montana State Historic Preservation Office will soon provide data concerning historic site evaluation and settlement patterns. Most homestead sites on BLM land occur on tracts of land utilization land that were acquired by the government during the Great Depression. Based on the assumption that approximately 160 acres of LU land should have a homestead remnant, it was estimated that approximately 1,000 homestead sites are located on the 161,834 LU acres in Musselshell, Yellowstone and Stillwater Counties in the resource area.

TABLE 3.11: CULTURAL RESOURCES AND CHRONOLOGY IN THE BILLINGS RESOURCE AREA

Cultural Period	Cultural Site Types on BLM Lands
Paleo-Indian (10,000-6000 BC)	lithic scatters caves rockshelters
Early and Middle Plains Archaic (6000-1000 BC)	lithic scatters caves rockshelters hearths
Late Plains Archaic (1000 BC-500 AD)	lithic scatters caves rockshelters hearths cairns bison kills rock alignments cribbed log structures tipi rings
Late Prehistoric (500-1800 AD)	lithic scatters caves rockshelters hearths cairns bison kills rock alignments rock art cribbed log structures tipi rings
Early Historic (1800-1880)	lithic scatters hearths cairns bison kills rock alignments rock art cribbed log structures tipi rings burials medicine wheel historic trails trading posts
Late Historic (1880-1930)	homesteads mining, oil and gas debris

Source: BLM, 1982

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Presently there are three properties on BLM land in the resource area which are listed in the National Register of Historic Places: the Hoskins Basin Archeological District, the Demi-John Flat Archeological District and Petroglyph Canyon. The Bandit Site (48BH460), has been determined eligible for listing in the National Register, and many other sites not yet fully evaluated may be potentially eligible for a similar listing.

Indian Petroglyphs

TABLE 3.12: PREHISTORIC SITE DISTRIBUTION

Environmental Zones	Distribution
Musselshell Pine Breaks	2-3 sites per 640 acres
Forested Isolated Mountain Groups	.6-1.3 sites per 640 acres
Fort Union Pine Tablelands and Escarpments	2-3 sites per 640 acres
Yellowstone Valley	3-4 sites per 640 acres
Foothill Grasslands and Plains	1-2 sites per 640 acres
Beartooth Plateau and Volcanic Uplands	.5 sites per 640 acres
Clarks Fork and Drylands	2 sites per 640 acres
Pryor Mountains-Bighorn Canyon	.93 sites per 640 acres

Source: BLM, 1982

WILDERNESS

The following section discusses the four areas and units under wilderness study. The four areas are discussed in terms of:

1. Wilderness Quality. Each area's mandatory characteristics of size, naturalness and outstanding opportunities for solitude and/or primitive recreation are considered prior to making a recommendation for or against wilderness designation. In addition, any special features, ecological, geological, scientific, educational and scenic as well as historical values are considered.
2. Resource Values Within the Wilderness Study Units. The specific resource values in each study area are considered in determining the potential uses foregone if the areas were designated wilderness as well as how ongoing or potential resource use would affect wilderness if the areas were not designated. Resource values are discussed by study area or unit. Because the three areas located in the Pryor Mountains have similar resources, they have been grouped together for much of the discussion. Where specific resource values differ in these three units, the differences are indicated.
3. Diversity in the National Wilderness Preservation System. This section describes the extent to which designation of any area under study would contribute to expanding the diversity of the National Wilderness Preservation System (NWPS). The system places each area in an ecosystem and landform group and balances the distribution of wilderness areas. In addition, the opportunities for solitude or primitive recreation within a day's driving time (5 hours) of major population centers are assessed.

This analysis is based on the format outlined in the Bureau of Land Management's Wilderness Study Policy, which appeared in the February 3, 1982, *Federal Register*, Vol. 47, No. 23, pp. 5103-5107. Figure 3.8 provides the locations of the wilderness study areas and units.

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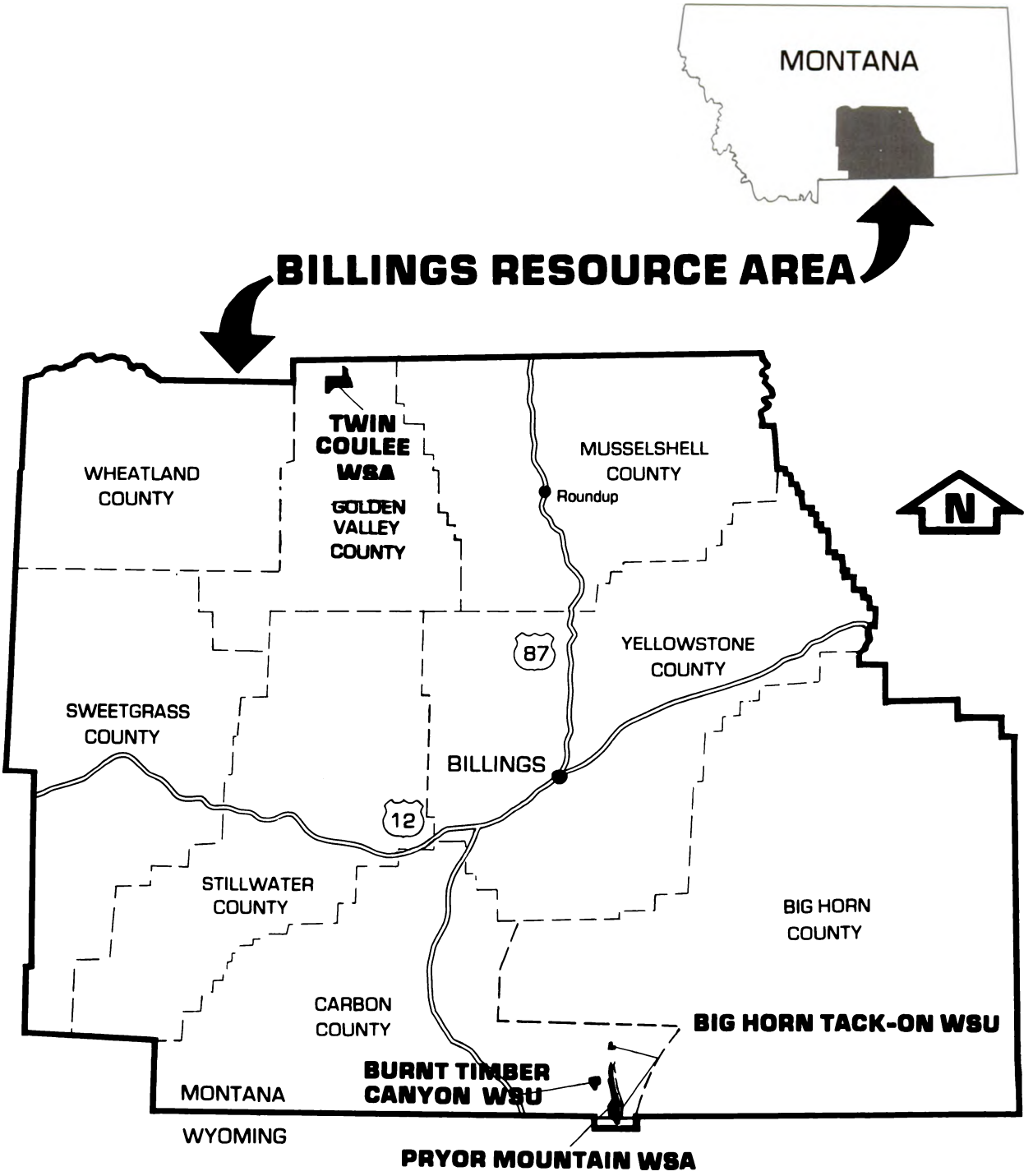
Figure 3.8: General Location of Four Wilderness Study Areas/Units



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Twin Coulee Wilderness Study Area MT-067-212

Size

The Twin Coulee Wilderness Study Area (WSA) consists of approximately 6,870 acres. The WSA is located in Golden Valley County along the southeast flank of the Big Snowy Mountains, approximately 35 miles south of Lewistown, Montana (see Figure 3.9). Lewis and Clark National Forest lands border this area on the north and west sides. The WSA is bordered on the east by a county road (Red Hill Road) and by private lands on the south. The northeast portion of the WSA is a narrow finger of land adjacent to the Red Hill Road, with a 3 mile segment with a core to perimeter distance of less than 250 yards. However, the bulk of the WSA is approximately 2 miles in width and 4.5 miles in length with a core to perimeter distance exceeding 1 mile.

The study area is contiguous on its western and northern boundary with the U.S. Forest Service RARE II Area 1-739, Big Snowies. The Forest Service released its draft recommendation of non-suitable for wilderness for the Big Snowies in July 1982.

Naturalness

The major portion of this WSA is apparently natural. There is evidence of past post and pole cutting and a vehicle-way apparently used as a haul road, in portions of Sections 21, 27 and 28, T. 11 N., R. 20 E. An old road cut is also visible in Section 15, T. 11 N., R. 20 E., but it hasn't been used or maintained for many years. Another vehicle-way crosses BLM land in Section 10 and terminates in adjacent U.S. Forest Service land. There are 2 miles of fence located along the eastern and southern boundaries of the unit. Table 3.13 is a listing of the man-made features in the WSA.

Solitude

Portions of this WSA offer outstanding opportunities for solitude. The area slopes from west to east with approximately 90% of the north facing slopes covered with dense stands of timber. The area consists of six deep, timbered, parallel drainages. The major impact on solitude comes from regular traffic on the Red Hill Road which forms the WSA's eastern boundary for approximately 5 miles. It is a county maintained road connecting Lewistown with a number of dispersed ranches, carries a relatively large volume of traffic (59 vehicles per day according to the Montana State Highway Department) and is visible from portions of Sections 14, 15 and 23 (see Figure 3.9). Also some ranching activity can be seen to the south, but this is in the distance and has little impact on the area's solitude.

Primitive and Unconfined Recreation

This WSA does not offer any outstanding opportunity for primitive and unconfined recreation. Opportunities exist for hunting, hiking, camping, rock climbing and nature study. However, due to the dense forest cover, steep slopes and sparse flora and fauna, these opportunities are limited. Winter access to this area is possible by cross-country skis or snowshoes, but the steepness and heavy timber in the interior make the area impractical for most winter sports.

Supplemental Values

Limestone outcroppings in some of the higher areas and well defined drainages enhance the scenic quality of the area. Scenic vistas of the adjacent prairie lands to the south and the southern slopes of the Big Snowy Mountains can be obtained from some of the higher portions of the WSA, but from most areas, visibility is extremely limited by dense stands of timber.

TABLE 3.13: MANMADE FEATURES IN THE TWIN COULEE WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Old post and pole cutting skid trails	T. 11 N., R. 20 E., Secs. 21 and 28	Eastern one-fourth of the unit	300 acres	Little effect on naturalness.
Old road cut	T. 11 N., R. 20 E., Sec. 15	Northeast corner	1/4 mile	Little effect on naturalness.
Vehicle way	T. 11 N., R. 20 E., Sec. 10	Northern edge	1/4 mile	Little effect on naturalness.
Vehicle way	T. 11 N., R. 20 E., Sec. 27	South-central portion	1/4 mile	Little effect on naturalness.
Fences	T. 11 N., R. 20 E., Secs. 14, 27, 31 and 32	East and south boundaries	2 miles	Little effect on naturalness.

Source: BLM, 1982

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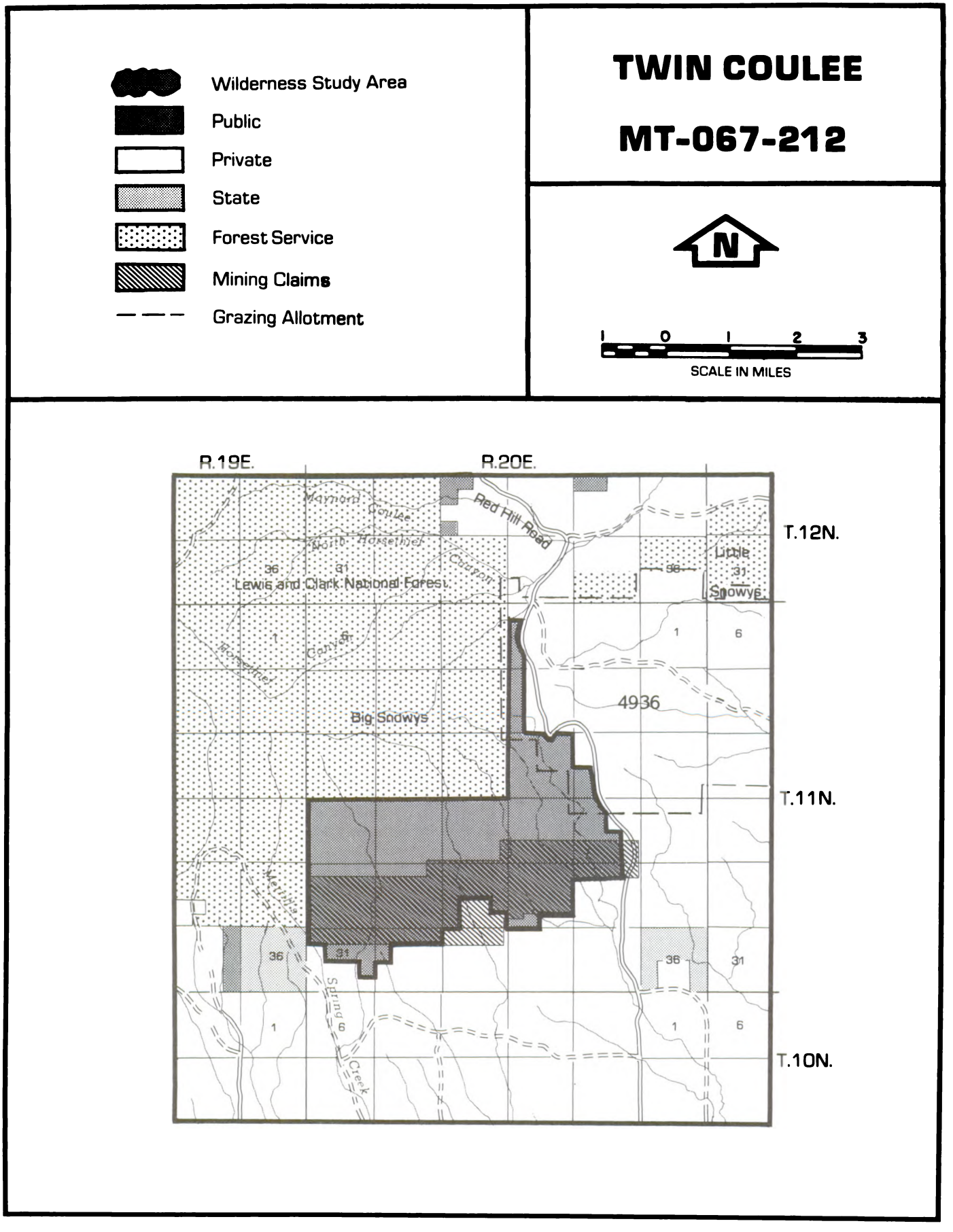
Figure 3.9: Twin Coulee Wilderness Study Area.



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Geology/Topography

The Big Snowy Mountains occur as a broad pine-covered range rising out of the surrounding plains. The maximum elevation is 8,730 feet at Greathouse Peak.

Public lands within the Twin Coulee WSA lie in the southeast corner of the Big Snowy Mountains, in T. 11 N., R. 20 E. (see Figure 3.8). Elevations in the WSA range from approximately 7,600 feet in the northwest corner, to 5,500 feet along Red Hill Road on its eastern edge.

The area is very rugged, with several deeply incised drainages and extensive outcrops of bare limestone and sandstone.

Sedimentary rock exposed in the Twin Coulee area is assigned to the Madison and Big Snowy Groups, of Mississippian Age. The rock types are generally limestones, shales and sandstones. These rocks have been folded during the Big Snowy Uplift, exposing the older Madison Group limestones at higher elevations, while the Big Snowy Group sediments outcrop along the flanks of the range.

Minerals

Mineral deposits in the vicinity of the Twin Coulee WSA consist of the Heath "oil" shale.

The Heath shales are extensive, covering an estimated 2,700 subsurface square miles of eastern and central Montana, and range in thickness from 160-240 feet. In this WSA, the Heath outcrops along the south and southeast flanks (Desborough, 1981). Marine shales such as the Heath, are commonly enriched in heavy metals, which are deposited in microscopic mineral grains. The Heath may contain anomalous values of vanadium, zinc, nickel, selenium and molybdenum, and up to 10 gallons per ton of synthetic crude oil.

Gypsum may be found outside the WSA both in outcrops and as subsurface deposits. It is thickest in the lower portion of the Otter formation, where its depth reaches 5½ feet plus the interbedded shale (Harris, 1972). Its thickness and extent are unknown.

Two companies have located lode mining claims in the area, probably for the metal-bearing shales in the Heath formation. One group of 100 claims lies in the southern part of the WSA. A second group of 66 claims blankets its southwest corner (see Figure 3.9). The claims were located in April 1981. The companies are maintaining the claims, though little exploration has ensued to date, and no plan of operations under 43 CFR 3802 has been filed with the BLM.

There are oil and gas lease applications pending in the Montana State BLM Office covering all of the Twin Coulee WSA. Final action on these applications has not been taken because of the backlog of similar applications.

Soils

The soils of this WSA are developed from sedimentary bedrock, primarily limestone. Soil depths run from very shallow to deep. Surface runoff is usually rapid. Parent materials in the WSA are of the limestones of the Madison Group.

Watershed

All drainages in this study area are ephemeral. No known watershed problems exist other than channel erosion from intensive local storm activity.

Vegetation

Much of this WSA is forested with Douglas fir, ponderosa pine and lodgepole pine. Depending on the density of the forest canopy, understory consists primarily of non-palatable forbs and shrubs. Sparse amounts of pinegrass and elk sedge are also present.

On the open ridgetops and under the less dense forest canopies, shrubby cinquefoil is the dominant shrub with numerous forbs and some grass species also present. Grasses include Idaho fescue, Kentucky bluegrass and timber oat grass.

Timber

In 1975 an extensive inventory of the forest values was completed in the Twin Coulee WSA. The major species are ponderosa pine and some Douglas fir and lodgepole pine. Scattered Engelmann spruce patches and individual trees are also found along the moist drainages. The stands are in good condition with a minimal loss attributed to spruce budworm. Of the 6,870 acre area, 4,612 acres are classified as commercial forest, 1,495 as noncommercial and 763 as non-forested. The total volume is estimated to be 9.4 million board feet (MMBF) ponderosa pine, 2.6 MMBF of Douglas fir and .3 MMBF of lodgepole pine. No harvesting has been done in this WSA except for some horse logging in the 1930's.

There is a demand for timber resources from the sawmills located in Roundup (approximately 44 miles), Lewistown (approximately 35 miles) and Judith Gap (approximately 36 miles).

Livestock Grazing

Six hundred acres along the eastern boundary of the study area are included in one grazing allotment. Grazing use is limited to 69 AUMs from July 1 to October 15. Red Hill Road, on the east boundary of the WSA, is used for a stock driveway with about 6,000 animals using the road annually.

Wildlife

The Twin Coulee WSA does not contain any perennial streams or other sources of permanent water supply. Because of the absence of water, wildlife populations and species distribution are limited.

The primary big game species are mule deer and black bear. Utilization of the area by mule deer is highest during winter months. The area is also utilized by elk during winter months.

Black bear probably utilize the study area throughout the year as part of their natural range in the Snowy Mountains.

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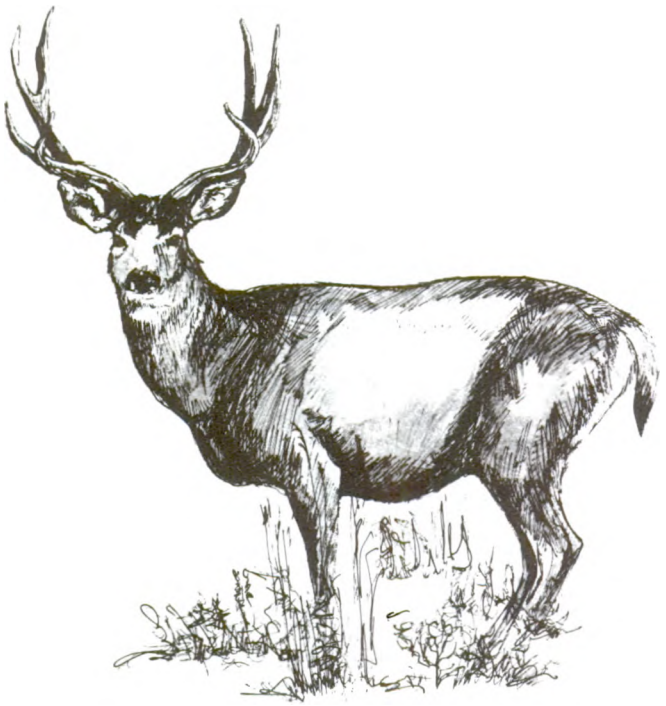

The only upland game birds known to occur in the study area are mountain (blue) grouse and Merriam's turkeys in the forested areas and sage grouse on the lower elevation grass and sagebrush covered prairie.

Predators or carnivorous animals in this WSA include black bear, skunk, coyote, red fox, bobcat and mountain lion (BLM, 1982).

There are no known or potential threatened or endangered species in the Twin Coulee WSA.

Access

This study area is accessible from the Red Hill Road, except during the winter months or after heavy rain storms when travel is difficult.

Recreation: Uses and Opportunities

Hunting is the major recreational use in Twin Coulee. The number of hunter days spent is unavailable, but the State Comprehensive Outdoor Recreation Plan (Montana Department of Fish, Wildlife and Parks, 1978) indicates that the general area near Twin Coulee is used for hunting mule deer and occasionally whitetail deer and black bear. Other activities may include hiking, picnicking and cross-country skiing.

Projected Visitation Trends

Little information is available for projecting visitor trends for the use of this wilderness study area. On-the-ground evidence indicates that the Twin Coulee WSA has received light use in the past. This low recreational use is probably due to the lack of water, steep topography, dense forest cover and low game population.

It's anticipated that visitation would change very little if Twin Coulee were designated as wilderness.

Visual Resources

Twin Coulee is classified as having Class II (good) scenic quality, consisting of a variety of landforms, colors and vegetation. The classification implies uniqueness and no outside intrusion. The area is covered with a mixture of ponderosa pine and Douglas fir with lodgepole pine at higher elevations.

Cultural Resources

This area was surveyed for cultural resources by Professional Analysts, Inc., in June 1977. Seven cultural sites were located, or one site per 981 acres. The majority of prehistoric sites are limestone rockshelters. In addition to 7 definite cultural sites, 18 additional rockshelters bearing some suggestion of cultural occupation were located but not recorded as sites. It's felt by the surveyors that such density is based on a combination of low intensity of human occupation and the difficulty of finding sites in such terrain and heavy vegetation.

Classifications and Rights-of-Way

There are no classifications or rights-of-way within Twin Coulee WSA.

Adjacent Land Uses

The study area is bordered on the north and west by the Lewis and Clark National Forest. These lands are in a relatively natural condition and are used for some livestock grazing. The Red Hill Road parallels the study area along its eastern boundary.

Privately-owned grazing lands are located east of the Red Hill Road and directly south of the study area. These lands are in a relatively natural state with the exception of one private home and several primitive vehicle-ways. There are no activities associated with these lands which would have an adverse impact on the wilderness characteristics of the study area.

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Pryor Mountain WSA MT-067-206

Size

This area consists of 16,927 acres. Approximately 12,575 acres are located in Carbon County, Montana and the remaining 4,352 acres are in Big Horn County, Wyoming. The area is located approximately 15 miles north of Lovell, Wyoming along the southern slopes of the Pryor Mountains. The Sykes Ridge Road forms the eastern boundary, the Burnt Timber Canyon road and Custer National Forest lands border the western side. The southern boundary is formed by regularly used county roads as well as legal ownership boundaries and topographic lines (see Figure 3.10). The WSA averages 12 miles in length and 2 miles in width.

Naturalness

The limited evidence of man's presence within the study area is not concentrated in any particular area and is usually well screened by topography and vegetation. The unit contains 1 range management exclosure, 1 water catchment, 1 reservoir, 3 wild horse traps, 4½ miles of fence and 6 miles of vehicular-ways. There are at least 23 prospecting pits for uranium within the study area. Most are located along or near boundary roads. Table 3.14 is a listing of the man-made features in this WSA.

Solitude

Opportunities for solitude throughout the majority of the Pryor Mountain Wilderness Study Area are outstanding. The intricate drainage patterns and topographic relief offer ample opportunities for isolation to individuals or groups.

Primitive and Unconfined Recreation

There are outstanding opportunities for hiking, backpacking, nature and wildlife photography, rock climbing, nature study and viewing geologic features within the mountain foothills and canyons of this area.

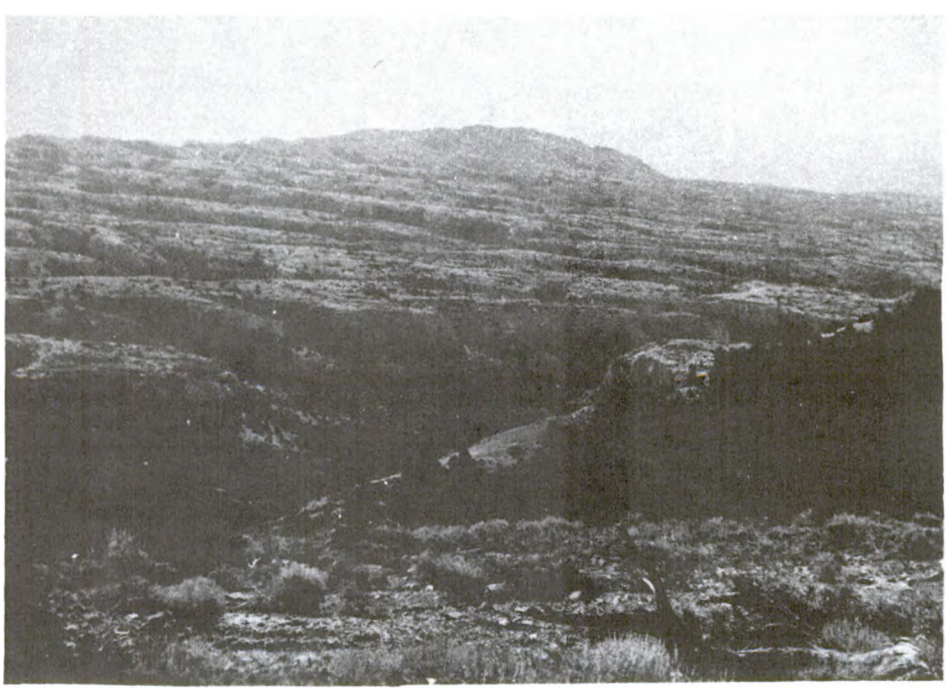
Hunting opportunities would not be outstanding in relation to the higher forested areas to the north. Horseback riding opportunities would be excellent, but on a short term basis. The lack of water and grass would limit this activity unless hay was brought into the area. Water is available at a few locations.

This WSA is located in the central portion of the Pryor Mountain Wild Horse Range and wild horses can be observed throughout the area, especially around watering places. The presence of wild horses is one of the major reasons for the current recreational use in the area.

The unit is extensive, being 12 miles in length and 1 to 3 miles in width. The area rises from an elevation of 3,900 feet in the south to 8,500 feet in the north. The topography varies from an arid sonoran landform in the south, to mountain foothills in the central region, to densely forested mountains in the north. Each portion of the unit has excellent opportunities for solitude.

The expanse of the southern portion compensates for the lack of vegetative screening. There are some patches of juniper and eroded hillocks which provide some screening. The central portion is more broken with many patches of timber. The mountain topography in the north is characterized by steep cliffs, dense timber and excellent opportunities for solitude.

Big Coulee is the major north-south drainage near the center of this WSA. This deep channel with an array of rugged side drainages would tend to spread users, and increase opportunities for solitude.



Pryor Mountain WSA
Big Coulee foreground
Lower end of Sykes Ridge in background

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Figure 3.10: Pryor Mountain Wilderness Study Area

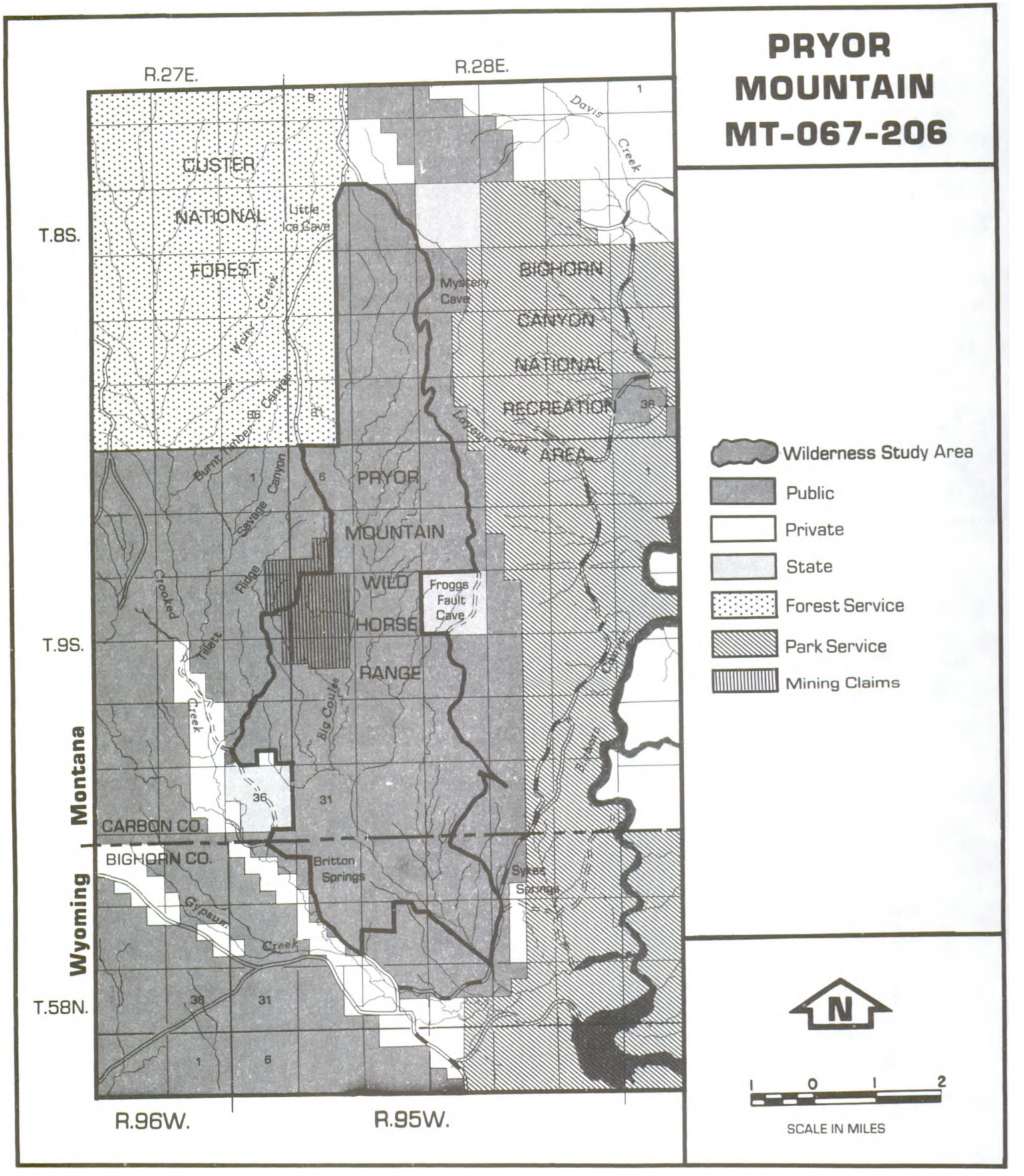

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TABLE 3.14: MANMADE FEATURES IN THE PRYOR MOUNTAIN WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Wild horse trap	T. 58 N., R. 95 W., Sec. 22	Cottonwood Springs	Approximately 100' in diameter	Well screened, in coulee bottom.
Wild horse trap	T. 9 S., R. 28 E., Sec. 29	Along canyon floor in Big Coulee	Approximately 100' in diameter	Well screened, in coulee bottom.
Wild horse trap	T. 8 S., R. 28 E., Sec. 28	Located on Sykes Ridge Boundary Road	Approximately 100' in diameter	Well screened by natural vegetation.
Water catchment	T. 9 S., R. 28 E., Sec. 4	Located along open ridgetop	100' x 150'	Visible from several points along Burnt Timber Canyon Road. However, because of vastness of country, not readily seen.
Reservoir	T. 8 S., R. 17 E., Sec. 17	1/2 mile southwest of Penn's Cabin	400' x 200'	Visible from Sykes Ridge Road.
Fence	T. 58 N., R. 95 W., Sec. 27	Cottonwood Springs southeast to Sykes Ridge Road	1 mile	Well screened by topographic features.
Seven uranium prospecting pits	T. 8 S., R. 28 E., Sec. 6	East side, Burnt Timber Canyon Road	Pits are approximately 20' by 25', 3' in depth	Visible from boundary road.
Four uranium prospecting pits	T. 8 S., R. 28 E., Secs. 7, 8, 18	East side, Burnt Timber Canyon Road	Pits are approximately 20' by 25', 3' in depth	Visible from boundary road.
Eleven uranium prospecting pits	T. 9 S., R. 27, 28 E., Secs. 19, 24, 25, 30	Two pits located along Burnt Timber Canyon Boundary Road, nine pits located along vehicle ways within 1 mile of western boundary road	Pits are approximately 20' by 25', 3' in depth	Two pits visible from Burnt Timber Canyon Boundary Road. The remainder are well scattered and quite inconspicuous.
One uranium prospecting pit	T. 9 S., R. 28 E., Sec. 33	Located 1/8 mile northeast of vehicle way leading to Big Coulee Horse Trap	Pit is approximately 20' by 25', 3' in depth	Inconspicuous until one is in close proximity.
Range management exclosure	T. 9 S., R. 28 E., Sec. 33	Located approximately 100 yards northwest of Sykes Ridge Road on ridgetop	Approximately 100' on a side	This exclosure is conspicuous from higher elevations within several hundred yards. It is not readily noticeable from greater distances.
Fence	T. 9 S., R. 28 E., Sec. 30, 31 T. 9 S., R. 27 E., Sec. 25 T. 58 N., R. 95 W., Sec. 20	Boundary fence in SE corner of unit	2 miles	Portions are visible from Tillett Ridge Road.
Fence	T. 58 N., R. 95 W., Sec. 20, 21	Drift fence for water trapping at Britton Springs	1 1/2 miles	Well screened by topographic features.
Vehicle way	T. 9 S., R. 28 E., Sec. 18, 19, 20	NE of Turkey Flat Road and is within the unit	1 1/2 miles	Little effect on naturalness.

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Vehicle way	T. 9 S., R. 28 E., Sec. 18, 19 T. 9 S., R. 27 E., Sec. 24, 25	Westcentral portion	3 miles	Little effect on naturalness.
Vehicle way	T. 9 S., R. 28 E., Sec. 19	Westcentral portion	1/2 mile	Little effect on naturalness.
Vehicle way	T. 9 S., R. 28 E., Sec. 19	Westcentral portion	1/4 mile	Little effect on naturalness.
Vehicle way	T. 9 S., R. 28 E., Sec. 7	Westcentral portion	3/4 mile	Little effect on naturalness.

Source: BLM, 1982

Supplemental Values

The designation of the Pryor Mountain Wild Horse Range, the first in the United States, is a definite supplemental value to the area. The presence of wild horse herds in association with native wildlife species enhances the wild and scenic qualities of the area.

Wind and water erosion has created an interesting drainage pattern through the center of the area. Big Coulee is the most significant canyon bisecting the central portion of the unit on a north-south axis. Many colorful rock formations, ranging from grays to deep reds are visible from the higher ridges.

Several archeological sites have been found in this study area. Dominant site types are lithic scatters, some of which also contain hearths, and discarded or lost stone tools.

Both vertebrate and invertebrate fossils have been found in the area. The Crooked Creek Natural Landmark is a National Register site for vertebrate fossils.

Geology/Topography

Pryor Mountain WSA, Burnt Timber Canyon Wilderness Study Unit (WSU), Big Horn Tack-On WSU

The Pryor Mountain study units are discussed in terms of one area in some of the following descriptions where resource values are identical. The units are located in southcentral Montana primarily on the southern slopes of the Pryor Mountains. They extend from the foothills to the upper slope of East Pryor Mountain and include Burnt Timber and Sykes Ridges. Elevations on the northeast corner of the mountain exceed 8,700 feet. Elevations decrease to the southwest (4,500 feet in Crooked Creek) and the south (3,800 feet in Big Coulee).

Sedimentary rock layers exposed in the area represent a generally complete sequence of deposition from the Middle Cambrian through the Lower Cretaceous Periods (an interval of nearly 400 million years). The total thickness of rock exceeds 4,500 feet (Blackstone, 1975). The upper slopes of East Pryor Mountain are dominated by the limestones of the Madison formation. Younger rocks outcrop to the south and southwest. Older rocks outcrop on its east-facing scarp (toward Dryhead Basin). The only exposure of the Precambrian (crystalline) rocks is at the base of this scarp. East Pryor Mountain is one of several of the major structural units which comprise the Pryor Range. Others include West Pryor Mountain and Big Pryor Mountain (Blackstone, 1940). These units developed from vertical uplift with their origins deep within the earth, producing anticlines (upfoldings of the rock) which often rupture into faults on their northeast corners.

This uplift and subsequent erosion produced the landforms present today. The mountains are a series of northwest-southeast ridges with steep northeasterly-facing scarps, and gentle slopes to the southwest.

Demi-John Flat, in the Burnt Timber Canyon study unit is an outwash terrace from an earlier period of erosion of rock from the upper slopes of Big Pryor and East Pryor Mountains.

Minerals

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

Prospective mineral resources which may occur within these three units include uranium/vanadium, limestone, oil, gas, sand and gravel and bentonite.

The uranium/vanadium mineralization in the Pryor Mountains is mostly confined to collapsed limestone caverns near the contact between the Madison and Amsden formations, on Big Pryor Mountain and on Burnt Timber Ridge. Over 500 uranium occurrences are known. Though most of these contain only traces of mineralized material, some deposits have produced over 1,000 tons of ore. The uranium/vanadium minerals form coatings on chert and limestone rock fragments within the collapse breccias. The grade of the ore may exceed 0.50% U^3O^8 (uranium oxide) and 1.50% V^2O^5 (vanadium oxide).

Minor mineralization has also been found as replacement of bone fragments, and in small "roll front" deposits in the Swift, Morrison and Cloverly formations where they outcrop in the Wyoming part of the Pryors, particularly in the Pryor Mountain WSA.

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Though much of the land disturbed by mining activities has been removed from wilderness study, many mining claims have been located on lands within the study units. One group has been located within the Pryor Mountain WSA. It includes all or part of 35 different lode mining claims located in 1956 and 1957. These claims blanket the only major mining area on Burnt Timber Ridge, in Section 7, T. 9 S., R. 28 E. Little recent exploration or development work has been performed on the claims, though they are being maintained. The claimant has not filed a plan of operations as specified by 43 CFR 3802. Most other claims have been abandoned.

Bentonite beds of unknown quality or thickness have been found in the Morrison, Cloverly and Thermopolis formations of northern Wyoming. These formations outcrop along the southern boundary of the Pryor Mountain WSA.

Limestone occurs throughout much of the northern portions of the units. Similar limestone mined near Warren, Montana is used as railroad ballast and in the process of refining sugar.

There are no known deposits of oil or gas within the three units. However, strata which lies at or near the surface of the Pryors are often producing horizons for petroleum elsewhere in the state. Their prospective value here is unknown, as no oil tests have been drilled within the horse range, and few in the rest of the Pryors.

Big Coulee (in the Pryor Mountain WSA) is a wide ephemeral stream which flows only during spring snowmelt and after high-intensity summer thunderstorms. Gravel is carried downstream from the Pryor Mountains at this time, accumulating in the stream channel when the current wanes. The material is primarily composed of limestone boulders and cobbles, with minor sandstone and chert fragments. It is useful in upgrading and maintaining local county roads.

No portion of the Pryor Mountain study areas has been leased for oil and gas.

Soils

The soils of these areas are developed from limestone, sandstone, gypsiferous siltstone and shale. Soil depths range from deep to very shallow with some bare bedrock outcrops on ridges, knolls and along slopes of high terraces and drainages. Soil textures range from very gravelly loam to sandy loam. The soils are well drained to excessively drained with slow to rapid surface runoff. The slope of land ranges from gently rolling to steep with deeply entrenched streams and drainages.

Watershed

Drainages in the Pryor Mountain study area are ephemeral. A number of side drainages flow into Big Coulee which experiences flows from snowmelt and intense summer storms.

Vegetation

The mid-elevations of the Pryor Mountains are characterized by patches of Douglas fir, particularly on the north slopes (northern portion of the Pryor Mountain WSA), with occasional open parks. Understory is generally sparse in the dense Douglas fir stands. Shrub species include snowberry, ninebark, spirea and juniper. Limber pine is also present along with bluebunch wheatgrass, needleandthread grass, bluegrasses, forbs and sedges. In the open unforested area, vegetation is composed primarily of shrubs and grasses. Big sagebrush and shrubby cinquefoil are the dominant shrubs. Grasses include mountain brome, Kentucky bluegrass and bluebunch wheatgrass. Common forbs are balsamroot, geranium and eriogonum.

The next lower belt consists mostly of mountain shrubs. Utah juniper occupies the upper elevations, gradually blending into mountain mahogany and eventually big sagebrush. Black sage, rabbit brush and skunkbush sumac may also be present along with bluebunch wheatgrass, needleandthread grass, three awn and Sandberg bluegrass.

The Red desert/saltshrub occurs on the lower portions of the WSA. Vegetation is generally sparse and scattered. Saltbushes of the Atriplex genus comprise the majority of the vegetation.

Timber

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

A timber inventory was done within the study areas in 1964. The major species are Douglas fir with minor amounts of limber pine, Engelmann spruce and Alpine fir. Overmature saw log stands of Douglas fir cover most of the north and east slopes, and canyons in the higher elevation of the WSAs. Stands of small, stagnated spruce and Alpine fir are found intermingled with the Douglas fir. Limber pine is prevalent as stringers, isolated trees and as patches intermingled with other species. Almost all of the forested areas consist of overmature Douglas fir and are in fair to poor condition with high risk levels for beetle infestation. Approximately 600 acres within the units are classified as commercial, and contain an estimated 5 million board feet (Billings District Consolidated Forest Type Acreages, Billings Resource Area, Billings, Montana). At this time, none has been harvested and the area is classified as a protection stand. There are 7,750 acres of noncommercial forest consisting of the above species. In addition, there are approximately 19,000 acres of noncommercial juniper which have received limited use for firewood, post, lamps and other decorative items. The use of forest products has been very limited and demand has been light.

Livestock Grazing

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

There is no licensed grazing permitted within the Pryor Mountain study areas since they are located within the Pryor Mountain Wild Horse Range. Approximately 130 wild horses graze throughout the three units.

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The Pryor Mountain Wild Horse Range was designated September 9, 1968, by order of Secretary of the Interior, Stewart L. Udall. The horse range is located in the southeastern portion of Carbon County, Montana and overlaps into Big Horn County, Wyoming. The Pryor Mountain WSA and Big Horn Tack-On WSU are located entirely within the Pryor Mountain Wild Horse Range. A small portion of the Burnt Timber Canyon WSU is outside the designated range. This portion consists of approximately 300 acres between Crooked Creek Canyon and the road crossing Demi-John Flat.

Wildlife

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

The three Pryor Mountain study areas offer many diverse habitat types and associated species of wildlife. The wildlife in these areas are somewhat unique in that they coexist with a herd of wild and free roaming horses.

The primary big game species found in the study areas are mule deer, Rocky Mountain bighorn sheep and black bear. Mule deer are the most abundant of these species. Little information is available on actual numbers or migration patterns. However, observations indicate that there is seasonal movement from the subalpine forest and meadow zones located in the northern portions of the study areas in the fall and winter months to the sagebrush, juniper and mountain mahogany zones along the southern foothills, where they winter.

Rocky Mountain bighorn sheep were introduced in the Pryor Mountains in two transplant efforts conducted by the Montana Department of Fish, Wildlife and Parks. The transplanted sheep established migration patterns at the time of the plants and subsequently, a majority of them migrated from the area. However, a resident herd estimated to be 10 to 20 in number still reside within the area, primarily in the Pryor Mountain WSA and Big Horn Tack-On WSU.

Black bear are quite abundant within the Burnt Timber Canyon WSU and the northern portion of the Pryor Mountain WSA. These areas provide the necessary hibernating, forage and cover requirements.

The only upland game birds known to occur within the units are mountain (blue) and sage grouse. Mountain grouse primarily occur in the northern, forested areas of the Burnt Timber Canyon WSU and Pryor Mountain WSA. Sage grouse are only found in the southern portions of all three areas where sagebrush/grassland is the dominant vegetation. Neither of these species are considered to have large populations within the study areas.

Coyotes are the most common predator in the Pryor Mountain study areas although skunk, weasel, bobcats and mountain lions are known to occur.

The only fisheries occurring in the units are in Crooked Creek within the Burnt Timber Canyon WSU. The primary species are brook rainbow and cutthroat trout. The cutthroat may be isolated in the upper portions and could represent a pure strain and, as such, have a very high intrinsic value (Bishop, 1973).

The only potential threatened or endangered species suspected to occur in the Pryor Mountain units is the peregrine falcon. However, surveys in 1979 and 1980 conducted by the BLM revealed no current use. The last confirmed sighting was made in 1972, with two unconfirmed sightings occurring in 1975 (South, 1980).

One plant being reviewed as threatened or endangered and identified on the Montana BLM list of sensitive species may exist in the Pryor Mountain study areas. This is *Eriogonum lagopus*, a buckwheat. It has not been positively located to date.

Access

Access to the Pryor Mountain WSA is best obtained from the south via a county road paralleling Crooked Creek. Access from the north can be obtained along the western boundary from the U.S. Forest Service's Dryhead Overlook to the Burnt Timber Canyon (Tillett Ridge) Road. Access along the eastern boundary is obtainable from the Dryhead Overlook to the Sykes Ridge Road. All of these access routes are public roads. However, 4-wheel drive vehicles are recommended for travel on the Burnt Timber Canyon and Sykes Ridge roads.

Recreation: Uses and Opportunities

Hunting is one of the major recreational uses in the three units. Actual number of visitor days spent in the Pryor Mountain study areas is not known but estimates are that use is light. It has been determined from traffic counters placed on roads adjacent to the areas, that approximately 5,000 people visited the general area of the study units from June to November 1980.

Other recreational activities occurring within the study units are rock hounding, caving, off-road vehicle driving, sightseeing and viewing the wild horses. Rock hounding use is light and occurs primarily in the southern portion of the Pryor Mountain study units. Cave use is also limited.

Projected Visitation Trends

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

The number of visitors using the study areas in the Pryor Mountains is related to visitor use on adjacent Park Service and Forest Service lands. The National Park Service reported that the annual visitation to the southern division of the Bighorn Canyon National Recreation Area was about 143,000 visitors in 1980 and 1981. The BLM has no data available to state what percentage of Park Service visitors use the study areas. However, the use would be a relatively small percentage because of the primitive nature of the roads accessing the area.

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Visual Resources

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

The Pryor Mountain study units are rated as having exceptional to moderate scenic values. The overall area varies from semi-arid to subalpine. The only visual intrusion in the area is the past minor mining activity associated with uranium exploration conducted in the 1950's. This consists of jeep trails along the boundaries and some small mining pits found mostly in the southern half of the units. Scenic attractions include fault scarps, deep canyons and outcroppings of the colorful Chugwater formation. Off-site instrusions consist of bentonite mining activity to the south, low traffic gravel roads and a National Park Service paved highway paralleling portions of the Bighorn Canyon, visible primarily from the Big Horn Tack-On. The community of Lovell, Wyoming approximately 13 miles from the nearest WSA boundary, powerlines and some nearby ranching activities are visible from the higher elevations of each of the study areas. Most of these intrusions are several miles or more from the study area boundaries.

Cultural Resources

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

Beginning in the summer of 1968, Dr. Larry Loendorf of the University of Montana began a 5 year survey; testing, and conducting excavation work in the Pryor Mountain and Bighorn Canyon National Recreation Area. As a result of field work in all three of the Pryor Mountain study units, 37 prehistoric sites have been recorded. Lithic scatters, stone rings, chert quarries, rock art, rockshelters, vision quests and a ford/migration area comprise the site types located. Lithic scatters dominate the site types.

In 1978, investigators from the Universities of Maine and Alberta began a study of human cultural patterns at upper, middle and low elevation caves and rockshelters in the Pryor Mountains. Work thus far in three caves has yielded cultural and faunal material dating approximately 6,000-9,000 years before the present.

Classifications and Rights-of-Way

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

The Pryor Mountain study areas were included in the exterior boundaries of the Pryor Mountain Wild Horse Range when the range was created in 1968. The designation is compatible with wilderness management.

Three areas were classified for retention under the Classification and Multiple Use Act of 1964. The classifications further segregated the lands from appropriation under the agricultural land laws, from sales under Section 2455 of the Revised Statutes and from operation of the general mining laws (not from mineral leasing laws). The three study areas lie entirely within these segregated areas. The classifications are compatible with wilderness management (see Figure 1.2).

Two rights-of-way for powerlines of ¼ mile and ⅛ mile are present in the Pryor Mountain WSA. There are no such encumberances in the Burnt Timber Canyon or Big Horn Tack-On units.

Adjacent Land Uses

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU

The Pryor Mountain units are bordered on the east by the 120,000 acre Bighorn Canyon National Recreation Area, which includes 12,700 acres of Yellowtail Reservoir. The 73,956 acre Pryor Mountain area of the Custer National Forest borders the three study units on the northwest. The National Recreation Area and Pryor Mountain Forest Service lands are high use recreation areas.

Irrigated meadows and several groups of ranch buildings are located approximately 1 mile south of the Burnt Timber Canyon Unit. However, these ranching activities are not visible from the unit. They would be visible from some of the higher points near the western boundary of the Pryor Mountain WSA, but distance mitigates any impact upon solitude within the area.

A 640 acre parcel of privately-owned land borders the southwest boundary of the northern portion of the Big Horn Tack-On Unit. These lands are in a relatively natural condition, similar to the study areas, with the exception of two fair weather roads which cross the area.

The Dryhead Basin is located north of the Big Horn Tack-On Unit and is clearly visible from some of the ridges in the study areas. These privately-owned lands are in a relatively natural state and are utilized for grazing purposes.

An old mining road constructed on the southeast flank of Red Pryor Mountain is visible from Demi-John Flat in the Burnt Timber Canyon Unit. This road was constructed in the 1950's as part of uranium exploration activities. It is located approximately 1 mile southwest of the unit.

Bentonite mining activities are currently being conducted within 3 miles of the southern boundaries of the Pryor Mountain and Big Horn Tack-On Units. Dust created by trucks on haul roads is sometimes visible.

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Burnt Timber Canyon WSU MT-067-205

Size

The Burnt Timber Canyon WSU is located in Carbon County, Montana and consists of 3,955 acres. This acreage is less than the minimal 5,000 acres required by the Wilderness Act for wilderness study, but the unit is contiguous to the U.S. Forest Service's 9,520 acre Lost Water Canyon RARE II Area which has been administratively recommended for wilderness designation.

The study area is bounded by Custer National Forest lands on the north, a road crossing Demi-John Flat on the west and boundaries based upon topographic and legal ownership lines on the south and east. Approximately ½ mile of the Tillett Ridge Road serves as the boundary along the northeastern portion of the unit (see Figure 3.11).

The unit encompasses a portion of the extremely rugged and isolated Crooked Creek drainage on the southern slopes of the Pryor Mountains. The area is approximately 3 miles in length and 2 miles in width.

Naturalness

This study area is in a nearly natural condition. A major portion of the unit is comprised of the steep, rugged Crooked Creek Canyon and because of its nearly inaccessible nature, has remained in a nearly pristine state. There is a 1 acre range management exclosure on Demi-John Flat in the northwest corner of the area. Approximately 2½ miles of fence separates BLM lands from Custer National Forest lands on the north and 1¾ miles of fence also exist along the southern boundary. A dozer blade cut approximately 200 feet in length is visible on the eastern edge of Crooked Creek Canyon from some points along the western edge of the canyon. This cut was made during uranium prospecting activities in the 1950's. Five uranium prospecting pits exist along the boundary road on Demi-John Flat. There is also a wild horse trap near the mouth of Burnt Timber Canyon. Table 3.15 is a listing of the man-made features in this unit.'

Solitude

The Crooked Creek and Burnt Timber Canyon drainages in the study unit offer outstanding opportunities for solitude. These drainages have cut into the limestone strata of the Pryor Mountains to a depth of several hundred feet and more. Only the canyon wall and intermittent side drainages are visible from the floor of the canyon. Ponderosa and limber pine and Douglas fir grow profusely along some of the canyon walls and side drainages. The combination of deeply incised topography and dense vegetation would tend to isolate recreationists.

The channeling effect created by the deep canyons is lessened by both their length (approximately 4 miles) and the heavy vegetative screening. A number of smaller drainages which radiate from the primary drainages would disperse users.

There is very little opportunity for solitude on the more open canyon rims and adjacent ridges, particularly in the southern tip of the study unit, because of the lack of vegetative or topographic screening. Approximately 10% of the area lacks outstanding opportunities for solitude.

Primitive and Unconfined Recreation

There are outstanding opportunities for hiking, backpacking, rock climbing, photography, spelunking and nature study within the Burnt Timber Canyon unit.

The deeply incised limestone canyons contain many caves, rock overhangs and alcoves that provide opportunities for exploration. Foot travel along the canyon bottom is difficult because of the dense underbrush and steep rocky talus slopes. However, the uniqueness of the area offsets the difficulty of travel.

Crooked Creek, which bisects the center of the unit, offers fishing for brook, rainbow and cutthroat trout. The trout are small and because of the dense brushy conditions along the banks and fishing is difficult.

Black bear and mule deer are the most common big game species, but again, because of the dense undergrowth, hunting opportunities are not exceptional.

The geologic and scenic values of the canyons are the most unique characteristics of the study unit, and are outstanding. All but 430 acres of this area are within the Pryor Mountain Wild Horse Range. The opportunity to view and/or photograph the wild horses is a popular recreation opportunity.

Supplemental Values

The eastern 1/3 of Demi-John Flat is within the wilderness study area. The Demi-John Flat Archeological District has been nominated to the National Register of Historic Places. Included within the district is the Demi-John Flat site which contains an abundance of stone rings (over 230) and rock cairn alignments. The site is significant for its large size and distinctive features.

The Tillett Petroglyph Site, also within the Demi-John Flat Archeological District, has been evaluated as having outstanding interpretive potential (Loendorf, 1971). The petroglyphs were made using paint in combination with incised designs upon a rock face.

As previously stated, fishing opportunities are not outstanding in Crooked Creek. However, the cutthroat trout in the upper portions of the creek are believed to represent a pure strain, and as such, have a very high intrinsic value (Clint Bishop, 1973, Montana Department of Fish, Wildlife and Parks Fisheries Biologist, personal communication).

The rubber boa, *Charina bottae*, occurs in the Crooked Creek and Burnt Timber Canyons. This snake is quite common in western Montana but the Crooked Creek drainage is one of the most easterly extensions of its range.

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Figure 3.11: Burnt Timber Canyon Wilderness Study Unit

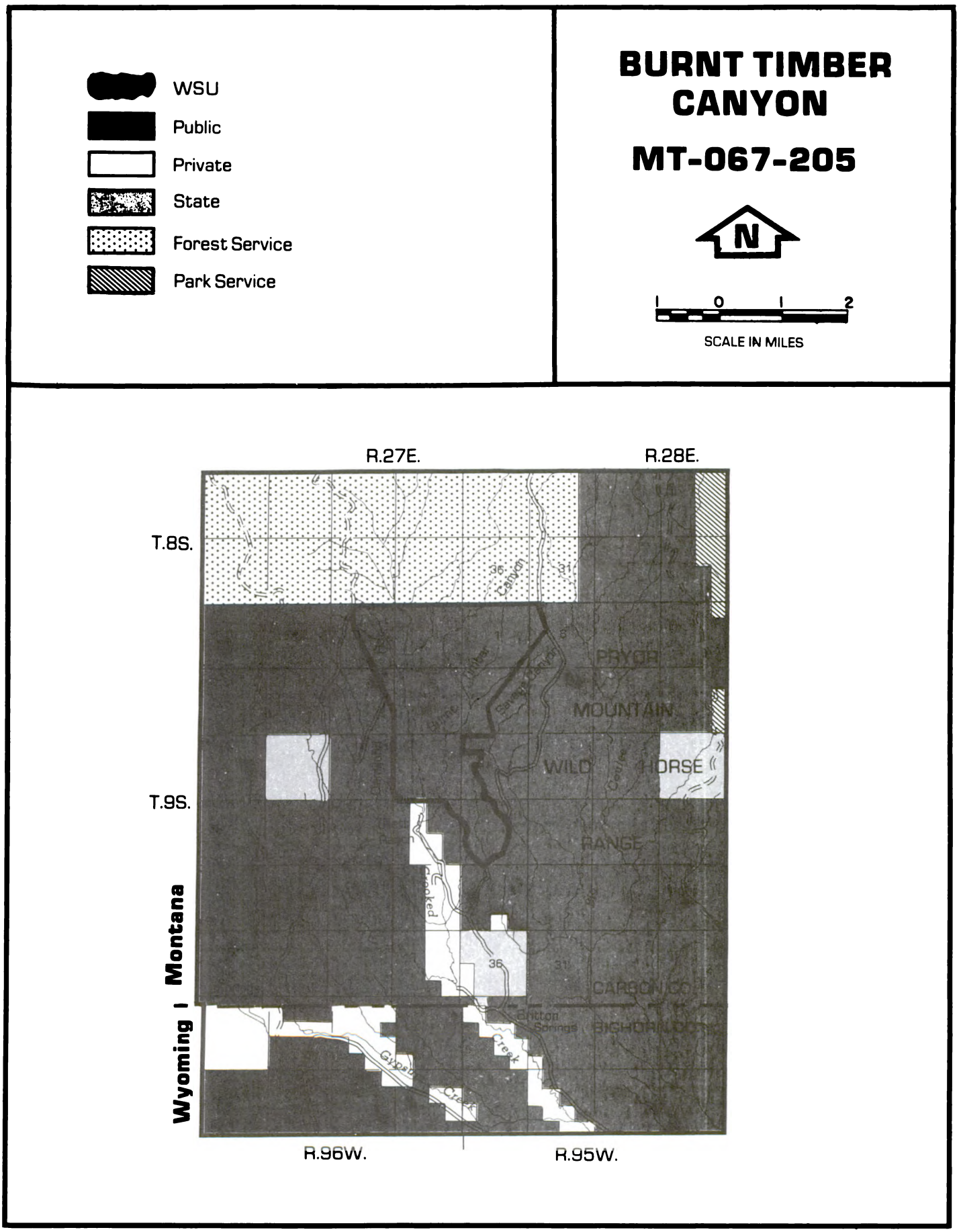

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TABLE 3.15: MANMADE FEATURES IN THE BURNT TIMBER CANYON WSU

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Five uranium exploration pits	T. 9 S., R. 27 E., Sec. 10	In near proximity to, and directly east of road crossing Demijohn Flat	Pits are approximately 20' by 25', 3' in depth	Very visible from road forming west boundary. Not visible from other locations within the unit.
Dozer blade cut	T. 9 S., R. 27 E., Sec. 11	East side of Crooked Creek Canyon, near top	Approximately 200' in length	Visible from canyon edge on Demijohn Flat.
Range management exclosure	T. 9 S., R. 27 E., Sec. 3	Along road crossing Demijohn Flat	Approximately 1 acre in size	Visible from road on Demijohn Flat. Not visible from other portions of unit.
Fence	T. 9 S., R. 27 E., Secs. 1, 2, 3, 6	North boundary fence separating BLM from U.S. Forest Service lands	2 1/2 miles	
Fence	T. 9 S., R. 27 E., portions of Secs. 23, 24, 25	Forms boundary, southwestern portion of unit east of Tillett Ranch	1 3/4 miles	
Wild horse trap	T. 9 S., R. 27 E., Sec. 14	Near mouth of Burnt Timber Canyon	Approximately 75' in diameter	Inconspicuous except from canyon floor or directly above from canyon rim.

Source: BLM, 1982

Stands of mountain mahogany, *Cercocarpus ledifolius*, are common on Demi-John Flat and portions of the PMWHR and is one of the more northerly extensions of its range.

The scenic values of this study area are outstanding. The deeply incised canyons formed by the Crooked Creek drainage are especially picturesque. The unique geologic formations and abundant caves would be of interest to most recreationists.

The Geology, Topography, Minerals, Soils, Timber, Livestock Grazing, Wildlife, Threatened and Endangered Species, Recreation: Uses and Opportunities, Projected Visitation Trends, Visual Resources, Cultural Resources, Classifications and Rights-of-Way and Adjacent Land Uses information for this WSU is the same as that given in the Pryor Mountain WSA discussion.

Watershed

Crooked Creek is a perennial stream averaging 45 cubic feet per second (CFS). Water quality is excellent although some bank deterioration occurs from wild horse trampling and grazing in the lower reaches of the channel prior to leaving public land. Burnt Timber Canyon is an ephemeral tributary to Crooked Creek. This drainage experiences rapid flows of short duration from snowmelt and locally intense summer storms, which may cause channel scouring. The use of the channel bottom by wild horses may contribute to localized erosion problems.

Vegetation

Vegetation in the Burnt Timber Canyon unit is dominated by Utah juniper and sagebrush. The understory on the thin, skeletal soils is usually low-growing species that have adapted to droughty sites. Major shrubs are Utah juniper, black sagebrush, mountain mahogany and snakeweed. Common forbs include buckwheats, phlox and prickly pear cactus. Several grass species (bluebunch wheatgrass, needleandthread grass, three awn, Sandberg bluegrass and western wheatgrass) are present but are generally sparse due to the low productive capabilities of the soils and low precipitation.

There is a distinct difference in vegetation along Crooked Creek due to the permanent water supply. Broadleaf shrubs dominate with an understory of sedges, forbs and grasses associated with the mesic conditions.

Access

Access to the Burnt Timber Canyon unit is obtained by the Crooked Creek Road from either the north or south. Access from the south is from Lovell, Wyoming via county roads to the Crooked Creek Road or from county and BLM roads east of Warren, Montana. Access from the north is from the U.S. Forest Service Sage Creek Road. All of these roads are fair weather, public roads.

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Big Horn Tack-On WSU MT-067-207

Size

The Big Horn Tack-On WSU is composed of two parcels of public land located in Carbon County, Montana and Big Horn County, Wyoming. The two areas consist of 4,550 acres, 80 of which are located in Wyoming. The northern segment contains 2,000 acres and the southern portion consists of 2,550 acres. Both segments are contiguous to 8,108 acres of National Park Service land within the Bighorn Canyon National Recreation Area, which has been recommended for wilderness designation. The study unit is approximately 17 miles north of Lovell, Wyoming.

The southern portion lies between the Sykes Ridge Road on the west and the Bighorn Canyon National Recreation Area, administered by the National Park Service, on the east. The Sykes Ridge Road is a BLM access road through the Pryor Mountain Wild Horse Range. This segment is a narrow strip of land averaging 9 miles in length and less than ½ mile in width. The area consists primarily of steep sideslopes rising up to a narrow ridgetop. Just below the ridge is the Sykes Ridge Road which runs the entire 9 mile length and forms the western boundary of this part of the tack-on. The northern segment is bounded on the west by Custer National Forest lands (see Figure 3.12). The northern segment is a diagonal shaped parcel averaging 3 miles in length and 1 mile wide. This segment is isolated from the other part of the unit by a combination of state and private lands.

Both parcels are contiguous to a portion of the Bighorn Canyon National Recreation Area, a Park Service wilderness study unit consisting of 7,645 acres. The tack-ons, while not meeting the size criteria to be WSAs, do contain wilderness values identified during the initial wilderness inventory. The southern segment appears to be a logical physiographic extension of the Park Service unit sharing 9 miles of common boundary. The northern parcel has a tenuous connection of ½ mile of common boundary and does not appear to significantly supplement the diversity of the Park Service area. Figure 3.11 shows the relationship of all agency wilderness study areas in the Pryor Mountains.

Naturalness

This unit appears to be primarily natural. However, there are some signs of man's presence in both parcels. The southern portion contains a BLM horse trap used for capturing excess wild horses. It is constructed of locally obtained native materials and is well screened by pine trees and topographic features. There is also approximately 1½ miles of low quality 2-track vehicle-ways and several uranium prospect pits. One mile of fence serves as the boundary between BLM and Forest Service lands in the northern portion of the unit. There is also an old wooden tower approximately 20 feet in height which was possibly used as a triangulation point by the U.S. Geological Survey. All of these features are located on or near boundaries and are well dispersed or screened by topography and vegetation. Table 3.16 is a listing of the man-made features in this unit.

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Figure 3.12: Big Horn Tack-On—Wilderness Study Unit

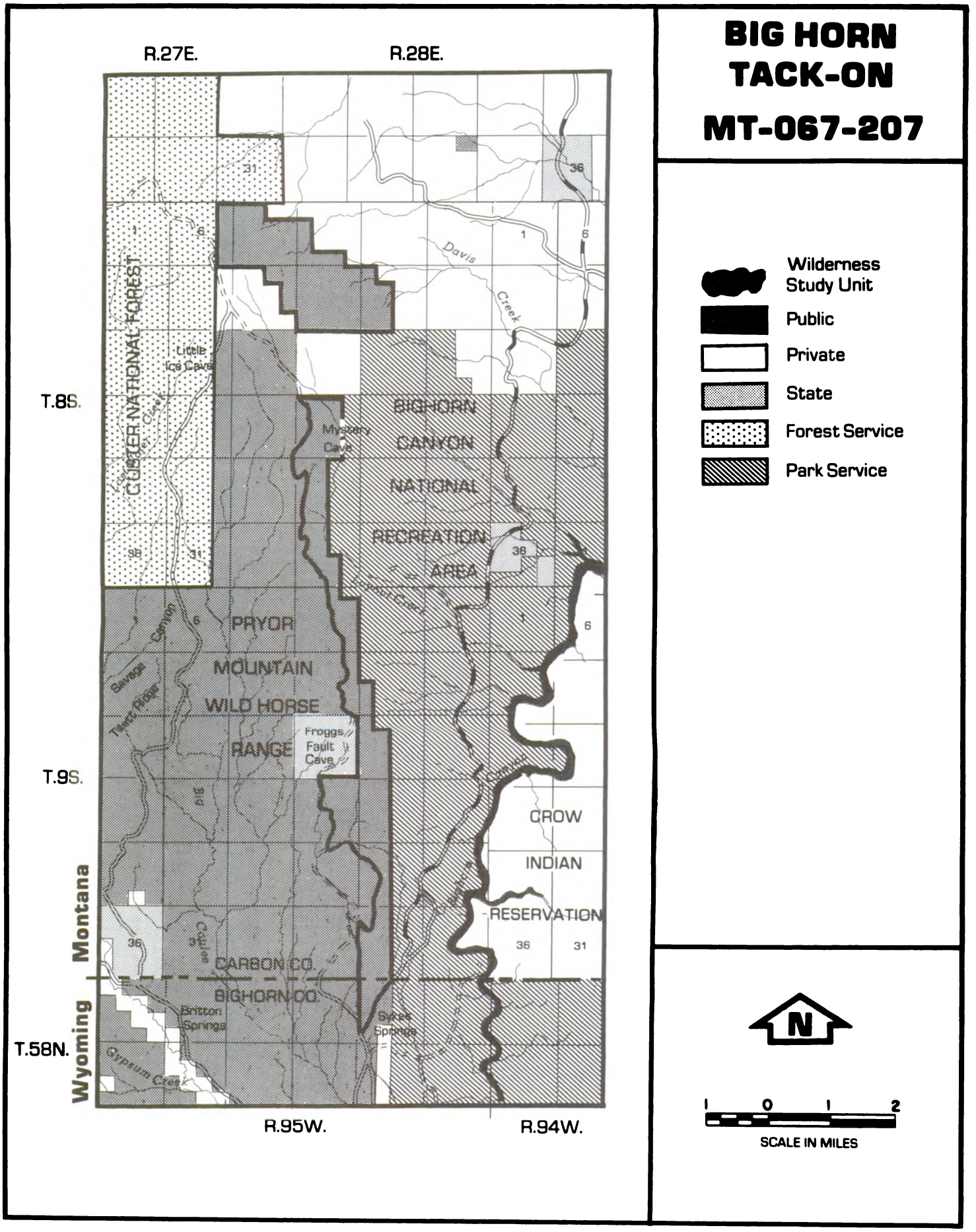

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TABLE 3.16 MANMADE FEATURES IN THE BIGHORN TACK-ON WSU

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Radio repeater	T. 8 S., R. 28 E., Sec. 21	Near northern boundary	1/2 acre	Visible only for a short distance.
Reservoir	T. 8 S., R. 28 E., Sec. 5	Along south boundary	5 acres	Visible only for a short distance.
Old tower	T. 8 S., R. 28 E., Sec. 9	Central portion of section	1/2 acre	Visible only for a short distance.
Wild horse trap	T. 8 S., R. 28 E., Sec. 28	Located on Sykes Ridge Boundary Road	Approximately 100' in diameter	Visible from boundary road.
Vehicle way	T. 9 S., R. 28 E., Sec. 21		3/4 mile	Visible from Sykes Ridge Road.
Vehicle way	T. 8 S., R. 28 E., Sec. 21	North end of southern portion	3/4 mile	Little impact on naturalness.
Uranium pits	T. 9 S., R. 28 E., Secs. 21, 27 and 34	Located along Sykes Ridge Road	Pits are approximately 20' x 25' x 3'	Visible from Dryhead Overlook and Penn's Cabin.

Source: BLM, 1982

Solitude

The southern portion of this unit is approximately 10 miles in length and less than ½ mile wide in most areas. Toward the southern end, it becomes approximately 1 mile in width. This portion of the unit consists of the crest of Sykes Ridge and the westerly trending slopes just below Sykes Ridge. This high limestone ridge rises in elevation from approximately 4,000 feet in the extreme southern portion to 8,000 feet in the northern part. The crest of the ridge is primarily comprised of steep, rocky outcroppings.

Wilderness users would be able to detect automobile traffic on the Bad Pass Highway within the Bighorn Canyon National Recreation Area. At most points, this highway is approximately 1½ miles to the east.

The Forest Service Dryhead Overlook is visible from some of the higher vantage points in the northern portion of the unit. The scenic overlook is located approximately 1 mile to the northwest of the nearest boundary.

The outstanding opportunities for solitude are limited in the southern portion of the unit because of the elevated open nature of Sykes Ridge and the nearby location of the boundary road. Small heavily timbered areas in the northern segment of the unit provide pockets with outstanding opportunities for solitude. However, most areas of the unit are highly visible from the Dryhead Overlook which reduces the overall quality of solitude.

Primitive and Unconfined Recreation

There are two caves in the southern portion of this WSU which provide spelunking opportunities. However, these opportunities could not be considered outstanding because of limited access and in one situation, a dangerous point of entry. The possibility of rock climbing exists on some of the sheer limestone cliff faces and pinnacles for experienced climbers.

Hiking and associated photography and sightseeing activities are outstanding. The topographic relief, unique geologic formations and the wide expanse of rugged country within view from the ridgetops presents a challenge to potential users.

Hunting could not be considered outstanding in relation to opportunities in adjacent areas. Big game, primarily mule deer, are more frequently found on the National Forest lands to the west. There is also some black bear hunting in the Pryor Mountains, but this, too, most commonly occurs on National Forest lands. Some hunting would occur within the area in association with the more concentrated activity on adjacent lands.

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Supplemental Values

The scenic quality of the surrounding area is the most notable supplemental value. The deeply incised Bighorn Canyon and adjacent Dryhead Basin are clearly visible to the east and northeast from Sykes Ridge. To the south and southwest, the hillsides and steeply incised canyons within the PMWHR are within view. There are colorful marine rock formations exposed within the Bighorn Canyon and the Pryor Mountain Wild Horse Range. Their colors range from blues, greens and grays to the reds of the Chugwater formation. Conifers in the higher elevation National Forest lands to the west and northwest lend a predominately deep green contrast to the more arid lowlands within the horse range.

Archeological sites have been recorded within the study unit. Lithic scatters dominate the site types found in the unit but one vision quest site has been discovered.

The Geology, Topography, Minerals, Soils, Timber, Livestock Grazing, Wildlife, Threatened and Endangered Species, Recreation: Uses and Opportunities, Projected Visitation Trends, Visual Resources, Cultural Resources, Classifications and Rights-of-Way and Adjacent Land Uses information for this WSU is the same as that given in the Pryor Mountain WSA discussion.

Watershed

Drainages in this area are the upper ends of small ephemeral channels that are tributaries to the Big Horn River. Flows result from snowmelt and storm events and may be classified as having a high erosion potential due to the steep topography and shallow soils.

Vegetation

Vegetation is very diverse in both density and composition in the Big Horn Tack-On. The difference in elevation from the top of the Pryor Mountains to the Wyoming border is more than 4,000 feet. This results in a variety of physical, environmental and climatic conditions.

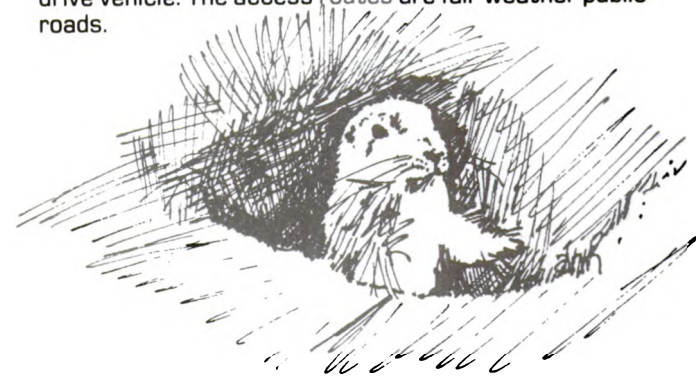
Vegetation occurs in belts as a result of the above factors. Beginning with the highest elevations and working down, the vegetative belts include subalpine meadows, conifer-grassland/shrub, mountain shrub and red desert/saltshrub.

The upper elevations support a wide variety of plant species mostly due to the increased precipitation. Characteristic vegetation includes scattered areas of alpine fir interspersed with subalpine meadows and plateaus. Much of the understory consists of small perennial forbs and sedges that have adapted to the moist, cool sites and shallow soils. Common grasses include sheep fescue, alpine timothy and alpine bluegrass. The middle elevations consist of steep timbered slopes with Douglas fir. The terraces support a variety of sedges, grasses and forbs.

The lower elevations consist of steep, easterly facing slopes that are sparsely vegetated by juniper, mountain mahogany, bluebunch wheatgrass and needleandthread grass.

Access

Vehicular access to the Big Horn Tack-On is accomplished by following the Sykes Ridge Road from the Dryhead Overlook. This road accesses both portions of the Big Horn Tack-On from the north. Access from the south is obtained via a county road in the Sykes Spring vicinity. Vehicular access from the north is by 4-wheel drive vehicle. The access routes are fair weather public roads.



Multiple Resource Benefits From Wilderness Designation: All Areas

Wilderness designation for the four areas or any portions of the areas could aid in the long-term maintenance of important wildlife habitat. Designation would protect native vegetation by limiting timber harvest, restricting mechanical treatments, restricting the introduction of non-native species and restrictions on off-road vehicle use. Vehicle use restrictions would also provide some protection for those cultural resources easily accessed by vehicular use and would alleviate stress on some wildlife species. Wilderness designation would ensure the preservation of scenic values by requirements that all new projects blend with the natural landscape. Watersheds would benefit by the careful placement of water developments and limitations on surface disturbing activities. The restriction of human activities in the Pryor Mountain Wild Horse Range would benefit wild horses by minimizing stress.

Diversity in the National Wilderness Preservation System: Ecotype/Landform

The U.S. Forest Service, as part of the Roadless Area Review and Evaluation II (RARE II) examined all wilderness and wilderness study areas for ecotype representation. Regional ecotype targets were assigned as a means of balancing ecotype diversity in the National Wilderness Preservation System. The highest target assigned by the Forest Service would have at least six wilderness areas of a specific ecotype.

The Twin Coulee WSA is located in Ecoregion 3110, subgroup 057, grama, needlegrass, wheatgrass as determined by the Bailey-Kuchler Ecosystems of the United States. This system is being used in wilderness studies by the U.S. Forest Service and BLM to classify lands into ecosystems based on climate, vegetation,

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soils and landforms. At the present time, there is one area in the 057 subgroup in the NWPS. In addition, there are 15 areas Presidentially-endorsed and awaiting Congressional action. There are also 14 areas presently under study in this subgroup.

The three Pryor Mountain study units are located within Ecoregion A3140, Wyoming Basin province. Three Federal agencies manage land in this area (see Figure 3.13).

All three of the Pryor units are located in Subgroup 056, Foothills prairie (*Agropyron-Festuca-Stipa*). There are currently two areas in this subgroup designated as components of the NWPS. There are also four areas which have been Presidentially-endorsed and are awaiting Congressional action. There are 19 other areas currently being studied in this subgroup. The highest regional target set by the Forest Service for this ecotype is five. Appendix 3.6 shows the wilderness representation in Montana and nationally of those ecotypes found in the four study units.

Wilderness Opportunities

Proximity to Population Centers

There are three standard metropolitan statistical areas (SMSAs) identified by the U.S. Bureau of the Census, within 5 hours driving time (250 miles) of the three study areas in the Pryor Mountains and two within 5 hours of Twin Coulee. Billings, Montana has a population of 66,800 and a countywide population of 108,035 according to the 1980 census. Great Falls, Montana has a population of 56,725 with a metropolitan area population of 80,696. Casper, Wyoming has a population of 51,016 with a countywide population of 71,856. The Casper SMSA is outside the day's driving distance of the Twin Coulee WSA.

Billings, Great Falls and Casper are within 5 driving hours of abundant and diverse wilderness areas. There are 11 areas containing a total of 4,559,142 acres within 250 miles of Billings, 18 areas totalling 8,673,567 acres within 250 miles of Great Falls, and 18 areas containing 4,022,461 acres within 250 miles of Casper. These three cities are also near a number of administratively-endorsed wilderness study areas. Billings is within 250 miles of 54 administratively-endorsed wilderness study areas totalling about 3,446,800 acres and 107 other WSAs totalling 2,457,496 acres. There are 68 administratively-endorsed study areas of 4,617,100 acres and 70 other WSAs totalling 1,720,578 acres within 250 miles of Great Falls. There are 35 administratively-endorsed study areas of 3,658,295 acres and 94 other WSAs totalling 4,022,461 acres within 250 miles of Casper. Appendix 3.7 is a tabular representation of the wilderness areas within 5 hours of the major population centers.

Montana Statewide Wilderness Summary

Table 3.17 and Appendix 3.8 are status listings of all designated wilderness and wilderness study areas by agency, in Montana.

Regional Wilderness Analysis

Montana, Wyoming and Idaho are combined into a region for this analysis. Visitors from this region have good access to central Montana and are within reasonable driving distance to visit any areas included in this study. Residents of these states have similar economic and social backgrounds and presumably similar demands for wilderness resources.

In the region, there are 26 wilderness areas containing 9,234,954 acres, 118 units comprising 5,911,096 acres of administratively-endorsed wilderness areas, and 199 other wilderness study areas with 4,536,243 acres. Overall, the region has 19,682,293 acres in 343 areas either designated wilderness or with the potential of designation. Table 3.17 shows the distribution of designated and potential wilderness areas by state.

Social and Economic Conditions

Approximately 144,000 people live within the eight Montana counties in the Billings Resource Area. The 1980 population of Billings was 66,800; in that year Yellowstone County contained 75% of the population of the entire resource area. Other major communities in the resource area include Hardin, Red Lodge, Roundup, Columbus, Big Timber, Harlowton and Laurel. The populations of these communities range from 1,200 to 5,500 people.

Table 3.18 displays the population characteristics for the counties in the resource area and for Montana. For most characteristics there are dramatic differences in the figures between urbanized Yellowstone County and the surrounding rural counties. During the 1960's all the rural counties lost population due to high rates of out-migration because of the lack of employment opportunities. During the 1970's the out-migration slowed and almost all counties registered a population growth. Population projections for the years 1985, 1990 and 2005 (BLM Economic/Demographic Model) predict a great deal of variation in growth rates. The population of Golden Valley County is expected to decrease in both the short and long term, while Yellowstone County is expected to grow to over 150,000 by the year 2005.

Tables 3.19 and 3.20 show county employment and personal income by source for 1979. The distribution by source varies a great deal among the counties. Generally, in the more rural counties such as Golden Valley, Stillwater, Sweetgrass and Wheatland, agriculture, government and retail trade contribute the largest proportions of employment and income. In most cases, agriculture contributes a larger proportion of the employment than income. Big Horn and Musselshell Counties derive a substantial portion of their employment and income from mining. The retail trade and service sources in Yellowstone County contribute the largest employment and income portions because Billings is the major trade and service center in the region. Table 3.21 shows the projected employment figures for the resource area. Total employment is expected to increase 31% from 1981 to 2005 while agricultural employment is projected to decrease by 8% during the same period.

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Figure 3.13: All Agencies Wilderness Study Status — Pryor Mountains.

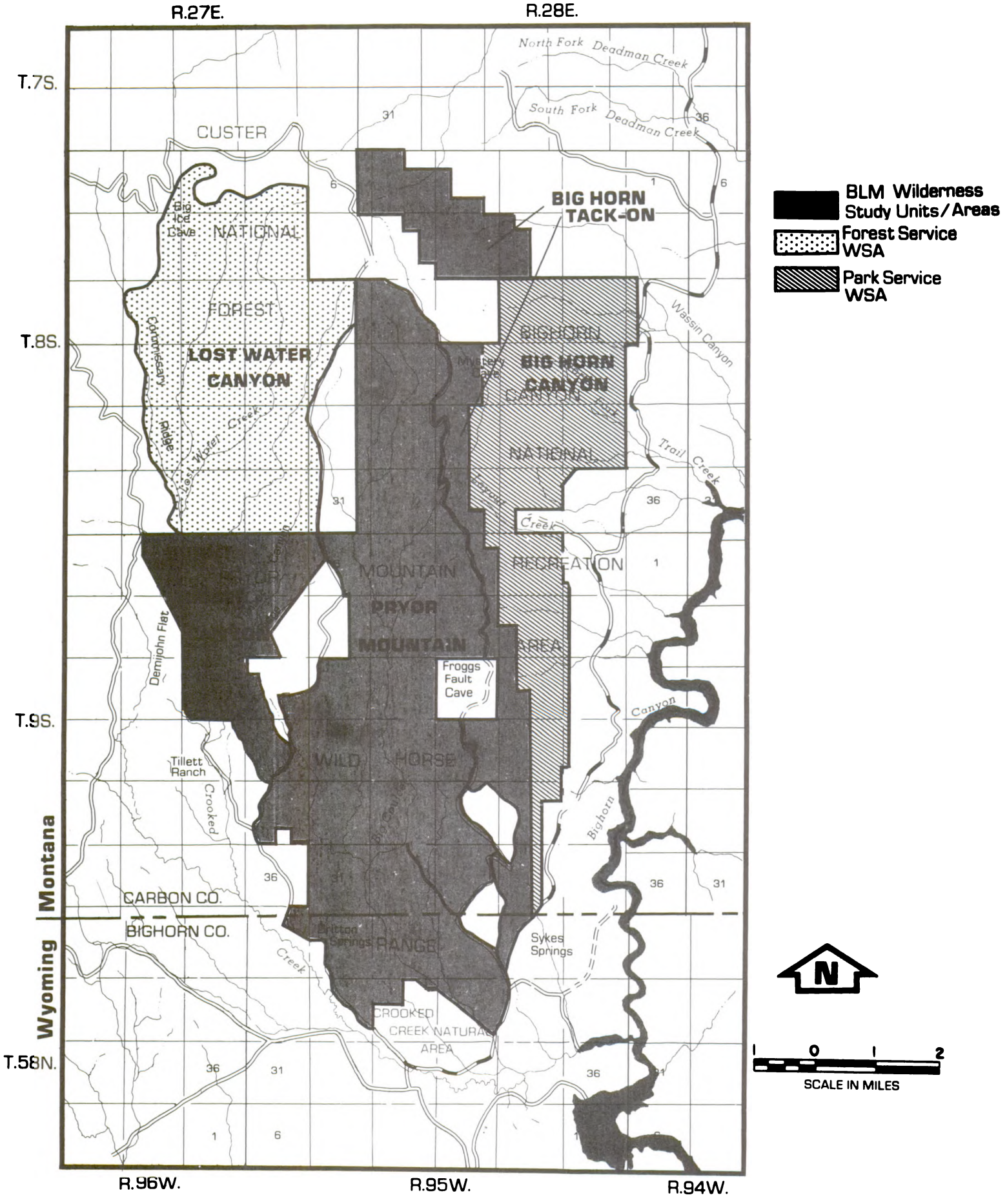

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TABLE 3.17: WILDERNESS REGIONAL ANALYSIS SUMMARY

State	BLM	USFS	NPS	USFWS	State Total
	Approximate Acreage (Number of Areas)				
STATUTORY WILDERNESS (STATE AND AGENCY)					
Montana	N/A	3,107,342 (11)	N/A	64,997 (3)	3,172,339 (14)
Idaho	N/A	3,825,069 (5)	42,243 (1)	N/A	3,868,312 (6)
Wyoming	N/A	2,194,303 (6)	N/A	N/A	2,194,303 (6)
TOTAL					9,234,954 (26)
ADMINISTRATIVELY ENDORSED (STATE AND AGENCY)					
Montana	N/A	681,812 (34)	1,084,660 (2)	161,480 (15)	1,927,952 (51)
Idaho	N/A	1,077,200 (43)	69,800 (1)	N/A	1,147,000 (44)
Wyoming	N/A	987,400 (21)	1,848,744 (2)	N/A	2,836,144 (23)
TOTAL					5,911,096(118)
WILDERNESS FURTHER STUDY AREAS (STATE AND AGENCY)					
Montana	427,767 (43)	1,207,769 (25)	7,645 (1)	N/A	1,643,181 (6)
Idaho	1,246,901 (61)	673,100 (13)	N/A	N/A	1,920,001 (74)
Wyoming	578,161 (48)	414,900 (8)		N/A	973,061 (56)
TOTAL					4,536,243(199)

Source: BLM, 1981

TABLE 3.18: POPULATION CHARACTERISTICS BY COUNTY

	Big Horn	Carbon	Golden Valley	Musselshell	Stillwater	Sweet Grass	Wheatland	Yellowstone	Montana
1960 population[1]	10,007	8,317	1,203	4,886	5,526	3,290	3,026	79,016	674,767
1970 population[1]	10,057	7,080	931	3,734	4,632	2,980	2,529	87,367	694,409
1980 population[2]	11,096	5,699	1,026	4,428	5,595	3,216	2,359	108,035	786,690
Percent change 1970-80	10	-14	10	19	21	8	-7	24	13
1985 projected pop.[3]	11,086	3,798	872	4,633	5,563	3,164	2,511	116,559	—
1990 projected pop.[3]	11,881	8,963	865	4,738	5,857	3,317	2,605	128,071	—
2005 projected pop.[3]	13,260	9,731	932	4,617	6,837	3,744	2,527	155,305	—
Percent urban 1960[1]	27.9	0	0	58.1*	0	0	0	82.7	50.2
Percent urban 1980[4]	29.7	0	0	0*	0	0	0	83.1	52.9

Sources:

[1]U.S. Department of Commerce, Bureau of the Census, 1970 Census of Population — Montana, Number of Inhabitants PC(1)28A.

[2]U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population and Housing for Montana. Population and Housing Unit Counts PHC80-V-28.

[3]Economic and Demographic Model, Bureau of Land Management, Montana State Office, 1982

[4]U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population — Montana, Number of inhabitants PC80-1-428.

*A community is defined as urban if the population is over 2,500. The population of Roundup dropped below 2,500 between 1960 and 1980.

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TABLE 3.19: EMPLOYMENT BY SOURCE, 1979

	Big Horn		Carbon		Golden Valley		Musselshell		Stillwater		Sweetgrass		Wheatland		Yellowstone		Montana	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
TOTAL	5686		2931		363		1765		2107		1382		1055		55996		365927	
Proprietor																		
Farm	474	8.3	670	22.9	127	35.0	220	12.5	405	19.2	233	16.9	130	12.3	1015	1.8	22622	6.2
Non-Farm	361	6.4	413	14.1	49	13.5	253	14.8	312	14.8	172	12.4	133	12.6	4825	8.6	33730	9.2
Wage & Salary																		
Farm	429	7.5	196	6.7	69	19.5	97	5.5	198	9.4	126	9.1	104	9.9	466	0.8	10600	2.9
Ag Services	D	—	45	1.5	<10	<2.8	D	—	18	0.9	D	—	<10	<0.9	243	0.4	2028	0.6
Mining	925	16.3	D	—	0	0.0	245	13.9	D	—	0	0.0	0	0.0	466	0.8	7733	2.1
Construction	242	4.3	43	1.5	0	0.0	14	0.8	50	2.4	52	3.8	<10	<0.9	2886	5.2	15613	4.3
Manufacturing	27	0.5	26	0.9	0	0.0	55	3.1	114	5.4	19	1.4	D	—	4591	8.	26847	7.3
Transportation & Public Util.	107	1.9	128	4.4	<10	<2.8	63	3.6	74	3.5	22	1.6	D	—	4556	8.1	22575	6.2
Wholesale Trade	D	—	30	1.0	<10	<2.8	D	—	32	1.5	D	—	<10	<0.9	5418	9.7	17420	4.8
Retail Trade	435	7.7	365	12.5	15	3.6	228	13.0	234	11.1	265	19.2	109	10.3	10766	19.2	56199	15.4
Finance, Insurance, & Real Estate	91	1.6	70	2.4	0	0.0	59	3.3	55	2.6	30	2.2	18	1.7	2462	4.4	13079	3.6
Services	1410	24.8	D	—	<10	<2.8	172	9.7	D	—	134	9.7	D	—	10297	18.4	60756	16.6
Government																		
Federal, Civ.	345	6.1	71	2.4	0	0.0	20	1.1	34	1.6	29	2.1	37	3.6	1618	2.9	13876	3.8
Federal, Mil.	59	1.0	47	1.6	<10	<2.8	26	1.5	32	1.5	18	1.3	13	1.2	635	1.1	9297	2.5
State & Local	601	10.6	412	14.1	75	20.7	245	13.9	285	13.5	241	17.4	139	13.2	5760	10.3	53612	14.7

Source: Regional Economic Information System, Bureau of Economic Analysis, Univ. of Montana, Missoula, MT

D = Not Disclosed

Table 3.22 presents objective indicators of social well-being by county. Both the urban and rural areas exhibit the characteristics generally associated with their respective area. In urban Yellowstone County, the data indicates the positive features of high levels of physicians per person, education, income, housing with plumbing for exclusive use (a housing quality indicator) and a high proportion of the population in the working age groups (18 to 64 years). Negative features include high divorce and crime rates and rapid loss of agricultural land. In the rural areas, levels of physician per person, education, income, housing with plumbing for exclusive use and the proportion of the population in the working age group are generally lower. However, crime rates and divorce rates are also lower and agricultural land is being lost at a slower pace. Therefore, both the urban and rural areas offer positive and negative factors.

The community of Lovell in Big Horn County, Wyoming is located just south of the Montana border approximately 13 miles from the Pryor Mountain Wild Horse Range. The 1980 population for the county was 11,896 while Lovell's population was 2,447. Both the county and community population levels decreased during the decade beginning in 1960; these decreases were regained during the following decade. Government, agriculture and mining account for the largest portions of the county's employment and income. Big Horn County does receive some benefits from tourism due to the Bighorn Canyon National Recreation Area, the Pryor Mountain Wild Horse Range and hunting and fishing opportunities. However, less than 13% of the 1980 wage and salary employment and less than 10% of the total income were from the retail trade and service sectors; these sectors are sometimes used as indicators of recreation related employment and income and are lower in Big Horn County than for Wyoming.

Ranch Related Economic Conditions

At the end of 1979, there were 3,377 ranches in the Billings Resource Area (Census of Agriculture, USDA, 1980). Forty-three of these ranches may be affected by this plan. The 43 ranches have a portion of at least one allotment in an "I" category or one of the affected "M" category allotments. All of the affected ranches are located in Carbon, Musselshell or Yellowstone Counties. The affected ranches represent 4% of the total ranches in Carbon and Musselshell Counties, and 1% of the total in Yellowstone County.

The 43 ranch operations were placed into 4 categories according to the numbers of livestock raised (see Table 3.23). Although there are a few ranches that raise sheep and yearlings, the dominant type of ranch is a cow/calf operation. Substantial cash crops, primarily wheat and barley, are raised on some of the operations. Where sheep, horses or yearlings are involved, the total number has been converted to equivalent cow units. The ranches are fairly evenly divided over the size categories. The median size has the largest number of ranches (33%).

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TABLE 3.20: PERSONAL INCOME BY MAJOR SOURCE FOR 1979 (Thousands of Dollars)

	Big Horn		Carbon		Golden Valley		Musselshell		Stillwater		Sweetgrass		Wheatland		Yellowstone		Montana	
	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%
Farm	1531	2.1	5313	21.1	478	28.4	3012	14.1	2649	16.0	3625	30.0	4787	33.5	-1479	-0.2	110055	2.5
Ag Services	D	—	536	2.1	50	3.0	D	—	205	1.2	D	—	50	0.3	1964	0.3	18162	0.4
Mining	30603	42.4	50	0.2	0	0.0	7879	37.0	D	—	0	0.0	0	0.0	12891	1.7	200060	4.6
Construction	4753	6.6	1742	6.9	50	0.2	498	2.3	1052	6.3	1143	9.5	251	1.8	67308	9.1	356367	8.2
Manufacturing	332	0.5	247	1.0	0	0.0	391	1.8	1571	9.5	167	1.4	D	—	85328	11.5	488941	11.3
Transportation, & Public Utilities	1961	2.7	2979	11.8	50	3.0	1599	7.5	1792	10.8	379	3.1	D	—	102414	13.8	489116	11.3
Wholesale Trade	D	—	728	2.9	106	6.3	D	—	471	2.8	D	—	98	0.7	99310	13.4	289116	6.7
Retail Trade	4786	6.6	2535	10.1	222	13.2	1918	9.0	2200	13.3	2120	17.6	1159	8.1	102250	13.8	533391	12.3
Finance, Insurance, & Real Estate	1466	2.0	962	3.9	0	0.0	911	4.3	640	3.9	503	4.2	230	1.6	40431	5.5	208117	4.8
Services	13446	18.6	D	—	134	8.0	1768	8.3	D	—	1151	9.5	D	—	132168	17.8	705306	16.3
Government																		
Federal,Civ.	5166	7.1	1118	4.4	50	3.0	314	1.5	586	3.5	419	3.5	519	3.6	30524	4.1	241205	5.6
Federal, Mil.	146	0.2	115	0.5	50	3.0	65	0.3	80	0.5	50	0.4	50	0.3	2215	0.3	75582	1.7
State & Local	6184	8.6	4163	16.5	606	36.0	2083	9.8	2788	16.8	2073	17.2	1220	8.5	65602	8.8	605286	14.0
TOTAL	72243		25171		1685		21288		16588		12069		14304		740906		4321021	

D = Not Disclosed

Source: Regional Economic Information System, Bureau of Economic Analysis, University of Montana, Missoula, Montana.

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TABLE 3.21: PROJECTED AGRICULTURAL AND NON-AGRICULTURAL EMPLOYMENT FOR BILLINGS RESOURCE AREA

	Agricultural Employment		Non-Agricultural Employment		Total
Year	Number	%	Number	%	
1981	4,634	7	66,133	93	70,767
1985	4,545	6	70,582	94	75,127
1990	4,461	6	75,692	94	80,153
1995	4,387	5	80,370	95	84,757
2000	4,326	5	84,674	95	89,000
2005	4,277	5	88,652	95	92,929

Source: North Dakota Economic-Demographic Assessment Model

The dependence of ranch operations on BLM forage is determined by a combination of the percentage of total required forage that public lands provide, the seasons the forage is available and the availability of substitutes for the forage. The percentage of dependence on public lands is the primary indicator. Table 3.23 shows the average dependency according to ranch size categories. The average ranch is about 22% dependent on BLM forage. Generally, the smaller ranches are more dependent on BLM grazing than are the larger ranches.

Table 3.24 shows the estimated ranch returns above cash costs, depreciation and debt service by ranch size. This is the amount available to the operators and their families for their labor and management and return to equity capital. Returns per ranch were estimated by formulating a budget for a representative ranch for each of the same size categories (see Appendix 3.9).

Data was not aggregated to the regional level because changes of the magnitude assessed here were not significant in previous studies (BLM *Prairie Potholes* and *Big Dry Grazing EISs*).

On the basis of 1977-79 average prices, the representative ranch in each size and type category earns enough income to at least cover cash costs and depreciation (see Table 3.24). Returns of $2,846 annually for the small livestock operation are not enough to pay the operator minimal wages or a return to equity capital. Some of these ranch operators and their families are employed off the ranch to supplement their incomes.

If they do not have off-ranch employment and the returns are not enough to cover family living expenses they usually allocate funds from the depreciation allowance, at least in the short term. If this happens, the operators must live with deteriorating equipment and without improvements and borrow on their equity when replacement becomes necessary.

Permit Value

The BLM does not recognize the right of the permittee to treat grazing permits as real property. However, these permits do have value and are bought and sold in the marketplace and used as collateral for loans (McCouney, 1976). The value of the permits varies considerably. If the permit is for small isolated, landlocked tracts of public lands, the value is minor. Where public lands provide a large block of grazing, the permit value can be substantial. Permit value is difficult to estimate because it usually is not separated from the total value of the ranch. Ranches are usually valued and sold on a cow-unit basis. It is estimated that an average value for BLM grazing permits is approximately $100 per AUM or $1,200 per animal unit. The average permit values for the different sized ranches are as follows:

Small	—	$19,100
Medium	—	$48,900
Large	—	$65,800
Very Large	—	$98,700

General and Issue Related Attitudes

The following information is based on the BLM's interactions with permittees and other interested individuals and groups, and the responses from the RMP issues brochure. In addition, results from several opinion surveys have been utilized.

General Attitudes

It is assumed the general attitudes of the rural residents in the Billings Resource Area are similar to those that have been documented in other parts of Montana. The following information was gathered in the Prairie Potholes region of northern Montana (Abt, 1980). The rural character of the area was mentioned most frequently when residents were asked what they valued about their lifestyle. Specific comments included an appreciation of the wide open spaces, naturalness, fresh air and solitude. The personal characteristics of the local people (friendliness, independence and industriousness) were frequently mentioned as positive aspects. The residents also valued the lifestyle offered by the local communities, mentioning such desirable qualities as everyone knowing everyone else, the lack of urban problems, relaxed pace, personal freedom and its being a good place to raise children. In addition, these residents indicated they wanted to see the land controlled at the local level. Outside interference, whether from agencies or groups was resented.

The residents of the Billings area exhibit a diversity of lifestyles and interests. This diversity causes a wide range of values and attitudes to be present in the area.

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TABLE 3.22: SOCIAL WELL-BEING CHARACTERISTICS BY COUNTY

	Big Horn	Carbon	Golden Valley	Musselshell	Stillwater	Sweetgrass	Wheatland	Yellowstone	Montana
Percent Population by Age (1980)[1]									
17 yrs or less	36.6	27.6	31.3	29.7	28.5	26.9	28.6	29.3	29.6
18 to 64 yrs	55.3	54.7	54.4	54.6	55.6	54.2	55.9	61.6	59.7
65 yrs or more	8.1	17.7	14.3	15.7	15.9	18.9	15.5	9.1	10.7
Percent Non-White Population (1980)[1]	47.9	1.0	1.6	0.7	0.7	0.7	0.6	4.2	5.9
Physicians per 100,000 people (1975)[2]	9.5	64.1	0.0	23.8	76.1	33.7	82.7	164.6	115.1
% High School Graduates Male/Female (1970)[3]	40.3/48.4	44.8/55.9	46.3/69.5	39.7/52.9	52.2/60.2	52.2/60.7	52.6/61.4	61.8/66.6	60.1
Crime Rate per 100,000 Population (1979)[4]	2061	2114	0	1498	2031	3588	6198	5993	4438
Unemployment Rate (1980)[5]	6.2	4.2	4.0	2.4	3.3	1.9	3.4	4.6	6.0
Divorce Rate per 100 Marriages 1975 (1970)[2]	6.0(5.5)	2.9(4.0)	0.0(2.1)	6.2(7.2)	3.6(5.6)	7.8(2.3)	4.5(4.0)	7.0(5.4)	5.7(4.4)
Per Capita Income (1980 Dollars)[6]	8,082	7,898	8,478	8,813	7,443	8,223	9,073	10,098	8,652
Housing Lacking Plumbing for Exclusive Use (1980)[7]	4.3	2.4	7.7	5.3	1.9	2.2	5.7	1.5	—
% Change in Acreages for Farms & Ranches (1969-78)[8,9]	-1.9	-5.0	-10.7	-0.3	-5.3	-3.0	-3.8	-17.0	-1.0
% Change in Number of Farms & Ranches (1969-78)[8,9]	-8.1	-9.1	-9.7	0.0	-4.0	-2.7	-4.2	-10.1	-1.9
% Change in Average Size of Farms & Ranches (1969-78)[8,9]	+6.8	+4.5	-1.1	-0.4	-1.4	-0.2	+4.2	-7.7	0.9

Sources:

[1]U.S. Dept. of Commerce, Bureau of the Census 1980, General Population Characteristics for Montana

[2]U.S. Dept. of Commerce, Bureau of the Census 1977, City and County Data Book

[3]U.S. Dept. of Commerce, Bureau of the Census 1970, Census of Population General Social & Economic Characteristics, Montana PC(1)-C28

[4]Montana Board of Crime Control, Criminal Justice Data Center Crime in Montana 1979 Annual Report, June 1980

[5]State of Montana, Dept. of Labor and Industry, Employment Security Division, personal communication

[6]Univ. of Montana, School of Business Administration, Bureau of Business and Economic Research

[7]U.S. Dept. of Commerce, Bureau of the Census 1980, General Housing Characteristics for Montana

[8]U.S. Dept. of Commerce, Bureau of the Census 1978, Census of Agriculture Vol. 1, State and County Data, Part 26, Montana

[9]U.S. Dept. of Commerce, Bureau of the Census 1969, Census of Agriculture Vol. 1, Area Reports, Part 38, Montana

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TABLE 3.23: ESTIMATED RANCH DEPENDENCY ON BLM GRAZING

Ranch Size Category	Ranches in Category No.	%	Average Herd Size (in Cows)	Dependency 0-15%	16-30%	31-45%	46-80%	Average % Dependency
Small (1-100 cows)	11	26%	65		7(64%)	4(36%)	—	29.1
Medium (101-250 cows)	14	33%	170	5(36%)	4(29%)	4(29%)	1(7%)	26.5
Large (251-499 cows)	7	16%	385	4(57%)	1(14%)	2(29%)	—	15.9
Very Large (500 cows & up)	11	26%	880	7(64%)	3(27%)	1(9%)	—	12.1
	43							

Source: BLM, 1982

TABLE 3.24: ESTIMATED RANCH INCOME BY RANCH SIZE

Ranch Size Category	Number of Cows	Average Number BLM AUMs per Ranch	Livestock Enterprise— Average per Ranch*
Small	1-100	191	$2,846
Medium	101-250	489	$10,662
Large	251-499	658	$24,501
Very Large	500 & up	987	$65,341

* Returns above cash costs, depreciation and debt source.

Sources: 1. BLM, 1982
2. ASCS, 1980

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Issue Related Attitudes

Grazing Management

There is a general agreement that livestock grazing is an appropriate use of BLM land. Many permittees favor the continuation of the status quo in terms of management. However, some individuals would like the BLM to interfere less with leased land while others would prefer the BLM to work more closely with the ranchers to increase productivity. Some individuals also feel the BLM should more closely monitor rangeland conditions.

Wild Horse Management

The Pryor Mountain Wild Horse Range is the subject of diverse public opinion which ranges from the horse range being a waste of the taxpayer's money to very strong support for its existence. A controversy exists over the concept of horse population control. There are those who support population control and others who favor population determination by natural factors. There are hunters who would prefer to see more elk and bighorn sheep in the area. There is strong support for the horse range in the nearby community of Lovell, Wyoming.

Wildlife

There is general support for wildlife values having an important part in multiple resource management. Such management includes cooperation with ranchers, communication with the State Department of Fish, Wildlife and Parks, the U.S. Fish and Wildlife Service and local groups interested in promoting wildlife and wildlife habitat.

Timber Management

While there is little commercial timber land in the resource area, there seems to be general support for the use of BLM lands to provide forest products such as saw timber, fence posts and fuelwood. Concern has been expressed for the protection of timber areas in keeping with other important resource values.

Coal

There is support for the leasing and development of coal in the resource area if the coal is needed and developed in a careful manner with reclamation. There are also individuals and organizations within the resource area strongly opposed to coal development and its possible impact to the environment and the agrarian way of life.

A study completed in 1978 (John Short and Associates) assessed attitudes regarding population growth and energy development in Carbon County. Surveys were mailed to every household in the county. Six hundred and seventy-two completed surveys were received for a return rate of 20.5%. Based on telephone surveys conducted to test for non-response bias, the surveyors concluded those who responded were representative of the county population. Approximately half of the respondents preferred the county population to grow as expected (in this study the respondent was told the Carbon County population was expected to increase from 8,400 in 1978—a high estimate given the 1980 census figure of 8,099—to 12,000 by 1990, much higher than the Economic/Demographic Model predictions) while 45% of the respondents wanted the population to remain stable or decline. Over 70% of those who responded felt the city and county governments should seek new industry; mining was the type of industry favored by over 25% of these respondents. Support was stronger for underground than for surface mining. Nineteen percent of the respondents said no mining should be allowed in the county. A substantial majority preferred new industry to bring people who both work and live in the county. Development in and around existing communities rather than in rural areas seemed most desirable. Over 55% of the respondents felt mineral development would affect them personally. Perceived positive benefits from mining included increases in employment opportunities, a broader tax base, increases in business opportunities and better jobs for young people so they are able to stay in the area. Concerns about mining included increases in crime, deterioration of air and water quality and problems associated with population growth and overcrowded schools. Two-thirds of the respondents said maintaining their lifestyles had priority over new jobs. Younger respondents (those aged 18 to 24 years) and those in the rural areas were more likely to be against population growth and development.

In 1979 a study conducted in Musselshell County by MT Energy, MHD Research and Development Institute Incorporated examined attitudes toward growth and development, and the levels of satisfaction with local services. Ninety-two people in the county were interviewed; respondents were randomly selected and contacted via telephone (the response rate was 72%). The responses were provided in the context of a coal-fired power plant being built in the area which would employ 600-650 construction and operations workers and thus can only give a limited indication of how residents might respond to the surface mine development analyzed in this RMP. Over 80% of the survey respondents indicated the standard of living of Musselshell County residents needed to be improved and that more jobs were needed in the county. A majority said that an increase in population would improve the quality of life; a similar number agreed with the statement that more people would cause more problems. Economic, industrial and agricultural growth were viewed as important for the county by over 85% of the respondents. Over 50% of the respondents were dissatisfied with the county housing situation. In addition, recreation services, county roads and shopping facilities were given unsatisfactory ratings by over 40% of the respondents. If growth were to occur (600 to 650 jobs) over half of the respondents felt housing and schools would be adversely affected. On the other hand, over 50% also felt medical and dental services and shopping facilities would be improved. Over 70% of the respondents felt the development would result in increases in crime, alcohol, drug abuse and pollution. Over 65% said the development would reduce poverty and unemployment.

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These responses indicate fairly positive attitudes toward growth in general coupled with an awareness that this growth would cause some problems. These attitudes, however, cannot be extended to indicate support for the surface mine examined in this document. The BLM personnel are aware that opposition to coal mining exists in the county; the exact extent of this opposition is not known. This is also true of the support for coal mining.

Oil and Gas

There is general support for oil and gas exploration and development on public lands if it proceeds slowly, as needed, and in keeping with good reclamation measures.

Land Tenure Adjustment

There is general support for the exchange of public land that lacks compelling public resource values. There is also concern about the loss of public values, such as recreational opportunities, if public lands are sold. If land exchanges are pursued, it is generally understood that the acquired land would have higher public values than those given up. This type of adjustment would be approved of by those concerned with public values. Some grazing permittees have shown either interest in, or concern about, possible land sales.

Recreation Access

There are diverse opinions regarding the acquisition of access for recreation purposes. The BLM employees who deal with recreationists indicate support for acquiring access from that group. Responses from the RMP issues brochure showed support for increased access although some individuals felt access should not be forced, was too expensive, or made areas accessible that should be left isolated.

Off-Road Vehicles

There is general support for the management of off-road vehicle use including use restrictions on certain areas.

Wild Horse Interpretation

There has been some support, particularly within the community of Lovell, for a wild horse observation and interpretive site.

Environmental Education

There is strong support by some individuals in the Billings area for environmental education sites. Educators who have used the sites in the past have expressed interest for future use of the sites.

Wilderness

There is both support for and opposition to wilderness designation in the resource area. Those who have expressed support for wilderness advocate protecting potential wilderness areas near population centers such as Billings. They also argue for the preservation of unique or dwindling wilderness characteristics. Opponents to wilderness designation cite a variety of reasons. Some individuals argue that wilderness designation would keep older people out of the area and would threaten nearby private landowners through government attempts to acquire more land. The Pryor Mountain Wild Horse Range, where three wilderness study areas and units are located, was described as "pseudo-wilderness" already, and considered to be too small an area to constitute a true wilderness area. Concern was expressed that if designated, wilderness values would have priority over the management of wild horses present in the area.

The results of a recent statewide poll (Keegan, Lenihan, Polzin and Wallwork, 1982) indicate that Montanans overwhelmingly approve of the concept of setting aside certain Federal and state lands as designated wilderness areas. They like the idea of preserving an area from development so that it will be available to future generations. There appears to be widespread support for wilderness areas among all kinds of Montanans. Regardless of age, sex, political preference or place of residence, more than 75% of the respondents said they favored wilderness areas. Even among nonusers, 84% supported designated wilderness areas.

About 40% of the Montanans surveyed favored the addition of more wilderness areas in the United States. However, only 25% said that Montana needs more wilderness areas. There were no major differences in opinions concerning wilderness between those living in eastern Montana and those in western Montana, where most of the state's wilderness areas are located.

National opinion surveys indicate the United States population is divided on the subject of wilderness. In 1977 a study conducted by Opinion Research Corporation (ORC) showed 7% of the population thought there was too much wilderness, 32% too little wilderness and 46% thought the amount was about right. Those favoring more wilderness said it is needed for recreation; too much land is being lost to business or industry and wildlife needs more space. Those favoring no additional wilderness felt the land could be better used for buildings, farming and a growing population. In another survey by ORC (1978), Americans rated wilderness fifth (after clean air, clean water, oil and natural gas) as basic resources in short supply. In a 1979 survey conducted by Cambridge Reports, 39% of the U.S. population felt there was already enough wilderness, while 37% indicated the need for more wilderness (the remaining 23% did not express a preference). The results of these surveys vary because of the changing political and economic climate in the United States and because the questions were phrased differently in each survey. It appears that about 33% to 50% of the population feels there are currently enough wilderness areas while a similar proportion feels there is a shortage. The attitudes of those living in Montana, Idaho and Wyoming are provided by three 1978 ORC surveys. In each state, a majority (52-58%) felt the current wilderness areas to be adequate. Smaller portions of the samples felt there was either too little (19-24%) or too much wilderness (14-21%).

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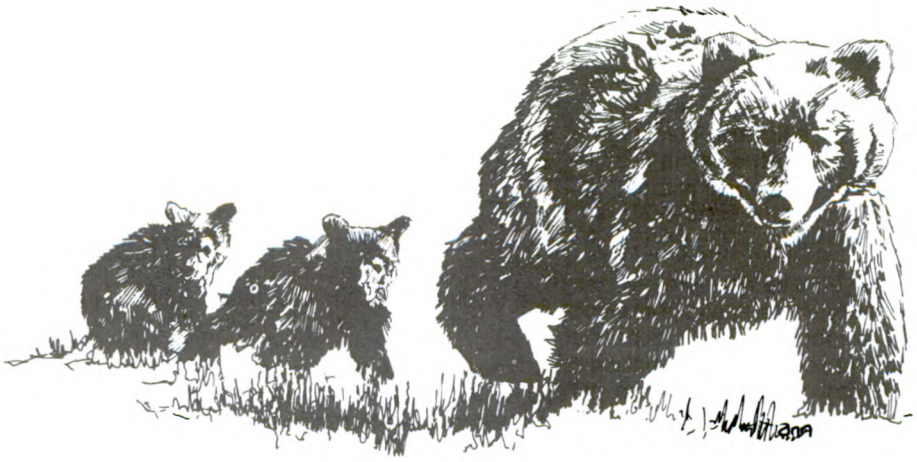

Four

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter explains the environmental consequences of the four alternatives, including the Proposed Action, discussed in Chapter 2. Environmental aspects are analyzed to determine the potential impact of each alternative. Climate and Geology and Topography were not analyzed further since these components would not be significantly affected by any of the alternatives.

The High Level and Proposed Action Alternatives include the disposal of lands or tracts in the Land Tenure Adjustment Area and entail a loss of Bureau of Land Management (BLM) management of those disposal lands. Application of the planning criteria (see Appendix 1.3, issues 7 and 8) has eliminated individual tracts with significant resource values or potentials for BLM resource management. Whether or not disposing of these tracts would result in actual losses of existing values, such as wildlife habitat, cannot be estimated at this time. However, since many of the tracts are suited only for the existing land uses, there may not be a significant change in any individual resource. The public use of disposed of lands would be lost as far as the BLM is concerned.

The remaining public lands in the Billings Resource Area (outside the Land Tenure Adjustment Area) will be evaluated by applying the criteria defined in the Land Pattern Review and Adjustment Project Management Plan.

This chapter quantifies the specific impacts (where possible), discusses where the impacts would likely occur, how much of the environmental component would be affected, and what the significance of the impact would be. The impact discussions relate primarily to public lands and those actions or proposals which impact specific resources in this chapter.

Chapter 4 is divided into three sections: Assumptions made for analyzing impacts, General Impacts and Impacts by Alternative.

Each alternative is analyzed as if it were fully implemented, fully funded, and fully staffed. For the purpose of analyzing the impacts of implementing each alternative, the following assumptions were made:

ASSUMPTIONS

Grazing Management

1. Chemical treatments would only be considered on noxious weeds; primarily leafy spurge.

2. Burning would be the only treatment considered for sagebrush.

3. The resource management plan (RMP) would be followed by activity planning. There would be a benefit/cost analysis completed for all proposals and all affected parties would be consulted.

Wildlife

4. All sagebrush tracts to be burned will be small and spread over a wide geographic area. Burn sites will be designated jointly by BLM and the Montana Department of Fish, Wildlife and Parks.

5. No sagebrush burning will be allowed in crucial habitats for antelope, sage grouse and chukar partridge.

6. All sagebrush burning will be conducted in conformance with the Montana Cooperative Smoke Management Plan.

7. All new allotment management plans will be developed cooperatively between the range/wildlife staffs and will include wildlife habitat management objectives.

8. All newly constructed water sources will be designed to facilitate use by wildlife.

9. All newly constructed range fences will be done in conformance with BLM Manual 1737 standards.

10. Wildlife ramps will be installed in all new stock-watering tanks to facilitate use by nongame species.

11. No oil and gas exploration/development will be allowed during crucial mating and nesting periods for upland game birds in high concentration areas (March 1 to June 30).

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12. Federal coal unsuitability criteria 9 through 15 will be completely applied prior to any leasing of Federal coal reserves.

13. No action affecting public lands will be allowed which would adversely affect habitats for state or Federally listed threatened or endangered species.

14. Management actions within floodplains and wetlands will include measures to preserve, protect, and if necessary, restore their natural functions (as required by Executive Orders 11988 and 11990).

15. Informal and formal consultation with the U.S. Fish and Wildlife Service will be carried out pursuant to Section 7 of the Endangered Species Act of 1973, as amended.

16. A biological assessment to identify any proposals which may affect threatened or endangered species will be completed prior to issuance of a Record of Decision for this EIS.

17. Prior to the disposal of any lands, an intensive wildlife evaluation will be completed and the Montana Department of Fish, Wildlife and Parks will be requested to offer a biological assessment of the area.

18. No ground disturbing activity will be allowed until a multi-disciplinary environmental assessment is completed.

Land Tenure Adjustment

19. Minerals ownership would normally be retained by the Federal Government. If exchanges of Federal/non-Federal minerals are found to be in the best public interest, such exchanges may occur.

Exchanges or exchange pooling may be made to acquire or exchange similar or dissimilar types of resources or land values dependent on identified need, guidance or objectives. Likewise, exchanges may be confined to relatively small areas or broader regions.

Cultural Resources

20. An appropriate level of inventory to identify historic and prehistoric sites or features would be conducted in areas proposed for any Bureau initiated or authorized surface disturbing projects (i.e., range improvements, coal leasing), land sales, exchanges or exchange pooling. Sites discovered would be evaluated using criteria for placement on the National Register of Historic Places (36 CFR 60.6) in consultation with the State Historic Preservation Officer. The BLM would consider the effect of any proposed undertaking on sites which meet the National Register criteria by following regulations of the Advisory Council on Historic Preservation (36 CFR 800) or memoranda of agreement negotiated with the Council.

In most cases, adverse effects to National Register quality sites would be avoided by relocating ground disturbing activities. Where moving an undertaking is not feasible, mitigation of adverse effects to significant cultural properties may be necessary. Mitigation would usually be an attempt to extract and preserve those attributes of a site which qualify it for the National Register. For example, many prehistoric sites are significant for the information they may provide about ancient Indian lifeways and cultural adaptations. Various levels of site recording, excavation, and analysis can often retrieve the important information, preserving it in records and reports.

Sites with socio-cultural values or aesthetic and recreational values amenable to public interpretation may be more difficult to mitigate by data recovery. Decisions about the treatment of such sites would be made on a case-by-case basis in consultation with the State Historic Preservation Officer and Advisory Council on Historic Preservation (see Appendix 1.10).

Coal

21. For analysis purposes, two new coal mines are projected and evaluated. This includes a 300,000 ton per year surface mine in the Bull Mountain field, and a 150,000 ton per year underground operation in the Joliet-Fromberg Field.

22. The 20 unsuitability criteria would be completely applied before any area could be considered in a final lease sale EIS.

23. Federal coal in the three fields in Carbon County would be developable only by underground mining methods.

24. If mining occurs, the lessee will comply with existing state and Federal regulations governing mining and reclamation. These include: Office of Surface Mining Reclamation and Enforcement regulations (30 CFR 700-899). Environmental Protection Agency regulations (40 CFR 0-1399), Council for Environmental Quality regulations (40 CFR 211), the Department of the Interior's Coal Management Program regulations (43 CFR 23 and 3400) and regulations promulgated under the Montana Strip and Underground Mine Reclamation Act, and the Montana Environmental Policy Act.

Oil and Gas Leasing

25. Oil and gas drill sites would average approximately 2 acres in size.

Visual Resources

26. Mitigation of impacts to visual resources would be developed for all actions causing surface disturbance.

Wilderness

27. In the short term, under the Continuation of Existing Management Alternative, other resource uses would be constrained by the Wilderness Interim Management Policy. In the long term, it's assumed that no wilderness designations would be made under this alternative.

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METHODOLOGY SECTION

The methods to be used for the installation of range improvements for the benefit of grazing management (cattle, horses and sheep), wild horses and wildlife are discussed in the Methodology Section of the Appendix. In addition, please refer to these appendix items for methods used in discussing ranch related impacts and the program implementation of the timber, off-road vehicle, cultural and visual management programs:

4.1—Methodology for Grazing Management

4.2—Methodology For Rating Grazing Management Response

4.3—Methodology For Wild Horse Management

4.4—Methodology For Wildlife Management Program

4.5—Methodology Of Timber Management

4.6—Methodology Used To Determine Impacts to Visual Resources

4.7—Management of Cultural Resources

4.8—Economic And Social Impact Assessment

4.9—Methodology for Controlled Burns

GENERAL IMPACTS

The impacts described in this section generally apply to all alternatives and are discussed separately.

Irretrievable and irreversible commitments of human resources, materials, fossil fuels and money would be made in all of the alternatives. The level of this commitment would vary among alternatives and within an alternative based on the level of implementation achieved.

Air Quality

Grazing Management and Wild Horse Management

Most of the soils in this resource area have moderate to severe wind erosion susceptibilities. In areas where vegetative cover is lacking and the range is in poor to fair condition, wind erosion can be severe. Once eroded by wind, the soil particles become airborne, and cause air quality to deteriorate. Spraying of noxious weeds can cause short-term localized impacts to air quality, in the treatment areas.

Coal and Oil and Gas Leasing

Surface disturbing activities may adversely impact the air quality locally through the production of dust. The use of internal combustion engines in heavy equipment and vehicles will emit chemical pollutants to the air, and cause short-term impacts.

Minerals

Off-road Vehicle (ORV) Use

Existing or proposed ORV designations would permit authorized mineral exploration.

Wilderness

The present status of the four wilderness study areas and units constrains mineral exploration and development, since these activities may not degrade wilderness values. Oil and gas exploration opportunities may also be restricted by these non-impairment provisions.

After December 31, 1983, designated wilderness areas will be closed to mineral entry. However, development work, extraction and patenting would be allowed to continue on valid claims located on or before that date. Valid claims located after Congressional designation could be patented for the mineral estate only. It is uncertain whether oil and gas leases would be issued in designated wilderness. After December 31, 1983, all wilderness areas will be closed to new mineral leasing. If not leased, oil and gas reserves would not be removed, resulting in an undetermined economic loss.

Soils/Watershed (Erosion and Runoff)

Impacts to erosion and runoff by the Bureau of Land Management's actions were analyzed using the existing soil group susceptibilities, the surface water runoff potential and the averaged annual yield in acre-feet/acre. It has been assumed that the changes in water quality are proportional to the changes in erosion and runoff.

Grazing Management

The proper management of livestock grazing is necessary to maintain the production of desirable rangeland vegetation (Hormay, 1975). Concentrations of livestock led to the overuse of vegetation and soil compaction in areas such as floodplains and around reservoirs (Rauzi and Hanson, 1966; Gifford, 1975; Holechek, 1980; and Smeins, 1975). The removal of vegetation and soil compaction by livestock decreases water infiltration and increases both sediment and water yields (Rauzi and Hanson, 1966 and Holechek, 1980).

Additional range facilities would improve livestock distribution for more uniform forage use. Livestock would still concentrate, especially in floodplain and riparian zones, but a greater number of range facilities would dissipate the overall effect to include upland areas and allow watershed conditions to stabilize or improve (Vallentine, 1971). Installation of range improvements would cause soil losses during the construction phases, but this is a short-term effect and would be mitigated by improving the distribution of livestock.

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Mechanical treatments and sagebrush burning expose large areas of bare soil to erosion initially, but greater vegetation cover after the first year lowers runoff and erosion. Range vegetation production can be increased by mechanical treatments of native or introduced plant species (Environmental Protection Agency, 1979 and Branson, et al., 1962). Soil losses from planned sagebrush burning can be stopped almost completely by the end of the first spring season (Pechanec, et al., 1954).

Wild Horse Management

The proper management of wild horse populations benefits watershed conditions just as proper livestock management does. However, watershed conditions would improve slowly due to the fragile nature of the Pryor Mountain Wild Horse Range. The soils in the Pryor Mountain Wild Horse Range are those described by Geomorphic Soil Group FOUR.

Timber Management

Logging would cause increases in surface runoff and erosion (Moring and Lantz, 1975). The primary causes of accelerated erosion are logging trails and skid areas (Hewlett and Nutter, 1969). Timber harvesting methods strongly affect the impacts to the watershed. The proposed timber management in all the alternatives would occur on Soil Groups FOUR and ONE.

Coal

Vegetative disturbances associated with surface coal mining increase the possibility of erosion and stream sedimentation (DHES, 1982). Required use of sedimentation ponds and other sediment control measures specified in state and Federal mining regulations prevent significant impacts caused by erosion (USGS and DSL, 1979). The quality of water from mined lands during mining and from reclaimed lands after mining would be equal to or better than quality prior to mining unless difficulties occur in revegetation or with subsidence. Timely occurrence of most precipitation during the growing season makes mineland reclamation normally possible (Bureau of Reclamation, 1982). It is assumed that reclamation would be successful. Runoff volume could be reduced during mining due to pit interception but could be increased following reclamation from reduced infiltration. These effects would be short-term and insignificant being mitigated by eventual root penetration and interception by numerous reservoirs, spreader dikes and other diversions that typically control flow on these stream channels (Dollhopf, 1979 and Bureau of Reclamation, 1982).

Oil and Gas Leasing

Oil and gas exploration and operations would create increases in erosion due to surface disturbances, compaction by traffic and the possible loss of vegetation from oil and drilling fluid spills. The Lewistown Oil and Gas Programmatic Environmental Assessment requires mitigation of the impacts to watershed by setting environmental stipulations for leasing and describing measures to reduce or eliminate the vegetative impacts from oil and gas operations.

Classifications

Lifting the Classification and Multiple Use Act of 1964 (C&MU) classifications in the Pryor Mountains could result in some increased mining activity and degradation of the soil and watershed resources.

Off-road Vehicle Use

The ORV closures and limited use designations protect the watershed by decreasing use and maintaining soil stability. Off-road vehicle use outside of restricted areas results in relatively small areas of compacted soil, increased runoff and increased erosion. Opening large areas of public land to ORV use would result in significant impacts to the soils and watershed.

Soils/Watershed (Water Quality and Streambank Protection)

When erosion and runoff are accelerated on a watershed, water quality is reduced because concentrations of suspended sediment, nutrients, total dissolved solids and fecal bacteria in surface waters are increased (EPA, 1979; Holechek, 1980; Smeins, 1975; and Johnson, Gary, and Ponce, 1978). Increased woody floodplain vegetation cover would help stabilize streambanks and channels, by resisting erosion, slowing the water velocity, improving water quality by reducing suspended sediment and fecal bacteria and lowering water temperatures by providing shade (Holecheck, 1980).

Occasional discharge of mine area water could also have short-term insignificant impacts. Quality of this water would depend on quality of water entering the pits and on any contamination caused by mining operations. Occasionally, mine effluent might have an increased concentration of nitrate as a result of blasting materials used in the mine (Cannon, 1982).

Grazing and Wild Horse Management

Grazing systems that provide periodic rest or deferment result in improved water quality, less soil compaction and streambank sloughing (Holechek, 1980). Due to increased soil losses from the construction of range facilities for livestock and wild horses, short-term water quality impacts are possible. These impacts include increases in suspended sediment concentrations, turbidity, total dissolved solids and channel erosion.

Timber Management

Small scale timber harvesting would produce short-term impacts to local streams as discussed in the Timber Management section of the Erosion and Runoff discussion.

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Soils/Watershed (Groundwater)

Coal

Bull Mountain residents rely heavily upon springs and shallow wells to furnish water for stock and domestic uses. Geologic formations associated with coal mining also serve as important groundwater aquifers for these local uses. As the coal is removed, groundwater flow is interrupted and modified. Springs, seeps, and shallow wells in mining areas often dry up and the groundwater supply to local streams is reduced during mining (DHES, 1982). Low permeability of aquifers in this area would probably restrict these effects to within approximately 1 mile of the mine.

Mine spoils left to replace a mined-out coal bed alter the groundwater resource further. Hydraulic conductivities of mine spoils have been found to be similar to those of coal beds they have replaced (VanVoast, 1982). This suggests that water sources eliminated by mining may be reestablished in time following reclamation. The magnitude of post-mining impacts on groundwater quality is highly variable and difficult to predict, being dependent upon several variables (VanVoast and Hedges, 1977). Dissolved-solids (TDS) contents in spoils water, for example, at the Rosebud, Big Sky and Decker mines are 64%, 100% and 39% higher respectively, than concentrations in nearby stock and domestic supplies (VanVoast, 1982). Recent research also points out that higher TDS concentrations found in spoils waters do not necessarily preclude the useability of the waters for stock or domestic supplies. Their average values are within the range of dissolved-solids in groundwaters currently being used and their diversity is such that many of them are highly acceptable for use. Some of them, at the higher end of the dissolved-solids range, would be unacceptable (VanVoast, 1982). The solution rate in the spoils tends to decrease as water moves through it. However, it may take centuries before groundwater quality approaches pre-mine conditions. Increases in groundwater discharge salinity can produce a significant deterioration of surface water quality in streams being fed by groundwater during low flows (Moran, 1979). Replacement sources of groundwater must be obtainable before existing sources can be jeopardized by mining. The responsible mining company must bear the expense to replace water sources that have been altered sufficiently to preclude current usage (DSL, 1980).

Regional groundwater impacts from coal mining have been studied using the Tongue River as an indicator, since it is the natural recipient of groundwater discharging from coal mine areas. Hydrologic studies have shown repeatedly that no single mine can cause substantial adverse changes in the Tongue River's quality or rate of flow (VanVoast and Thompson, 1982). Groundwater discharges modeled from nine mines upstream of the Tongue River Reservoir were shown to have insignificant effects on Tongue River water quality. Coal has been mined in the region of this study for years. Most operations in the past were small and underground and have had little noticeable effect on the land or water (VanVoast and Thompson, 1982).

Coal mining could have short-term localized significant impacts on water quantity and quality, impacts that must be mitigable to be in compliance with state and Federal mining laws. Localized groundwater quality could be irreversibly altered, but changes must be within limits that allow current uses or the water must be replaceable by other sources. Regional and long-term impacts would be insignificant unless allowed to become cumulative to the point that downgradient users would also need replacement sources.

Impacts on groundwater quantity and quality would occur under all alternative courses of action. Magnitude of the impacts would be related to the degree of mining.

Coal and Oil and Gas Leasing

Underground coal mining would have a much smaller impact on nearby streams. Increases in the turbidity of water could result from any stage of oil and gas development. Adverse impacts to water quality are possible during periods of high runoff by well site contaminants or spillage. The severity of the impacts would be proportional to the number of installations in an area and their proximity to streams and to the downstream water uses. True alluvial soils on alluvial valley floors would be protected from surface mining through coal unsuitability Criterion #19 (see Appendix 1.4).

Recreation Access

Public access to rivers and streams would cause some streambank stability problems, and associated deterioration of water quality. The BLM administers 30 miles of various perennial streams in the resource area.

Wilderness

Wilderness designation would cause no major impacts to soils and watershed. Erosion on vehicle ways would gradually decrease. The erosion associated with livestock grazing would continue. Since no projects to improve soils or watersheds are proposed in any of the study units or areas, no benefits would be foregone with wilderness designation. If none of the areas were designated as wilderness, there would be some potential for erosion and/or watershed damage, particularly from mineral development or timber harvest.

Vegetation

Proper use stocking, allocating half the annual forage production to consumptive use by livestock and wildlife, helps to ensure a sustained yield and improved range vegetation. Proper use allows the maintenance of plant food reserves, resists invasion of undesirable and unproductive plants and allows for the increase of desirable plants and groundwater supplies by improving ground cover and infiltration (Dyksterhuis, 1951). Proper consumption of the major forage plants is 50-55% (Lodge and Campbell, 1965) though some browse species can be used up to 60% (BLM Manual 4400). Heavier utilization (up to 80%) of crested wheatgrass is recommended on a periodic basis to maximize productivity (Lodge, Smoliak and Johnson, 1972). Light use (21-40%) is generally more conducive to range improvement than moderate use (41-60%) (Johnson and Smoliak, 1979).

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Heavy grazing stops root growth and since 30% of all root material must be replaced annually, this eventually reduces the root volume. Plant vigor diminishes with a reduction in root volume and the plant cannot compete with undesirable plants that fill the open spaces left by dead roots and smaller plants. The end result is a deterioration in range condition.

Hormay (1970) pointed out that it's unrealistic to assume that plants can be grazed at proper use levels through regulation of stocking because livestock graze selectively both by plant species and by areas. This results in overuse of preferred plants and accessible areas, especially floodplains and riparian zones. Selective grazing, constant stocking levels and the wide variability in annual production result in severe use of riparian zones and other areas near water in dry years. Thus, proper use allocations must be combined with proper grazing management to ensure maintenance or improvement of vegetation over an entire allotment.

Cook (1966) found that grazing range plants during any part of the growth period reduces plant carbohydrate reserves which periodic deferment can restore. It is recognized that excessive use during flowering time is the most damaging (Hormay, 1970). As much as 75% of plant's winter-stored carbohydrates are required to initiate the first 10% of growth (Hormay, 1970).

The deferment necessary to restore carbohydrate reserves can be provided by grazing systems that rotate use during the growth period, developing early spring pastures to defer the use of native range, proper use grazing and proper seasons-of-use. If the ecological range condition is unsatisfactory, improvement can also be made by a grazing system that provides for the physiological requirements of plants. This grazing system must periodically defer use until after seed ripening of key forage species.

In a study of various management systems on BLM allotments in the Missouri Breaks EIS area, Willard and Herman (1978) found that rest rotation was better than continuous season long grazing but not as effective as winter grazing in improving water infiltration, allowing for better vigor of key species and for more litter and increasing the production of desirable grasses. No conclusions were made about the use of deferred rotation in this study because of the limited sample.

Winter grazing is the most favorable grazing treatment because all grazing takes place when plants are dormant. Plant carbohydrate reserves are least depleted during the dormant period. Vigorous plants and excellent litter cover result from winter grazing, conducive to high water infiltration. Infiltration rates are also improved because soil compaction caused by livestock occurs only during periodic thaws. Willard and Herman (1978) found that winter use improved vegetation more than any other grazing system.

Soil characteristics and current range condition are the determining factors in estimating response to grazing management. The estimated response to various soils shown in Appendix 3.3 was developed from observations and monitoring of similar soils under grazing management systems. Some sites would not improve significantly in response to grazing management systems due to soil factors such as dense clay, gravels, claypans, etc., or areas with a dense canopy of sagebrush or pure stands of blue gramma.

As a result of increases in desirable plants, range conditions would improve to high, good or excellent in 5-10 years after mechanical treatments. Based on available literature (Ryerson, et al., 1970; Ryerson, Taylor, and Houlton, 1974; Houlton, 1975; Ryerson and Houlton, 1979; and Ryerson, Houlton and Wambolt, 1980), observations of treated areas and professional judgment, it is estimated that 75% of any mechanically treated acreage would reach excellent ecological range condition while the remainder would reach good condition. Average production increases are 200-250%. This increase is used in projecting the increase in forage production expressed in animal unit months (AUMs) due to mechanical treatments.

Treatments of crested wheatgrass combined with fencing into separate pastures are effective in changing the relative unpalatability of rank crested wheatgrass areas. Yields can be doubled by interseeding 1 pound of alfalfa per acre (Lodge, Smoliak and Johnson, 1972) and sustained. Lodge, Smoliak and Johnson (1972) found that crested wheatgrass in combination with the native range yields far greater returns in forage production than native range alone. They found that the most effective grazing system was to graze crested wheatgrass May through mid-June with the native range and crested wheatgrass grazed "free choice" thereafter. The native range improved significantly after seven years with this system.

Prescribed burning of dense (25% canopy) big sagebrush will greatly reduce canopy of sagebrush. Grass cover will increase, resulting in at least a doubling of forage production (Ralphs and Busby, 1978; Pechanec, 1954). The longevity of the effects will depend on the management applied and moisture patterns. Variations in fuel type and density, terrain features, weather and method of ignition will affect the actual amount of area burned (Smith and Busby, 1981). In this analysis, it is assumed that 40% of the area would be unburned.

Grazing systems based on the physiological requirements of the key plants would ensure the maintenance or improvement of mechanically treated and burned areas in the long term (Ryerson 1970).

Range facilities contribute to improved range condition and production by improving livestock distribution and allowing for rest and deferment of pastures or rest of riparian zones. Fences control livestock movement while water sources, salt and minerals (when placed in the proper location) improve vegetation by better distributing livestock (Vallentine, 1971). Vegetation can be adversely affected where improperly located fences cause livestock concentrations, trailing and overuse (Vallentine, 1971).

Leafy spurge and other noxious weeds can outcompete desirable forage plants and reduce forage by 75% (Leafy Spurge Symposium, 1979). Control is very difficult but can be accomplished over several years. Proper applications of 2,4D and Tordon do not harm grass species which increase in response to weed control.

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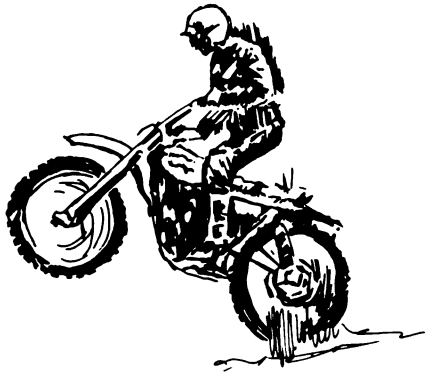
Off-road Vehicle Use

Off-road vehicle closures and limited use designations protect the vegetation by decreasing use and maintaining soil stability.



Livestock

Studies have shown that per-acre livestock returns are higher under proper use grazing levels than under heavy use. Higher production per cow unit would offset the fewer cows being grazed under proper use (Houston and Woodward, 1966).

In some instances, rotational grazing treatments would increase livestock stress and reduce productivity. Smoliak (1960) found that yearling gains were higher under continuous grazing than under deferred rotation in a southeastern Alberta study. However, where the ecological range condition is poor or fair and the pasture overgrazed, livestock productivity would be low but would improve as forage condition improved (Smoliak, 1960 and Johnson and Smoliak, 1979). Where livestock productivity is high and forage conditions are generally good, rotational grazing would reduce gain per-animal although total production would be increased due to more livestock numbers (Smoliak, 1960).

The manner in which the livestock are handled and the time allowed for pasture moves are important in animal stress (Johnson and Smoliak, 1979). Where grazing systems have a minimum number of pastures to accomplish the desired improvement in vegetation and result in substantial increase in livestock AUMs, there would be no net negative impacts (Johnson and Smoliak, 1979).

Livestock would benefit from rest rotation systems, too, particularly in these systems where the rested pasture is used first the following spring. In the rested pasture the brood cows would be provided a reliable supply of nutritious forage at a critical time and the previous year's growth would provide shelter for young calves. In addition, the presence of old growth vegetation can help reduce scours and grass tetany which are both aggravated by an abundance of green grass.

Grazing systems which require fencing large allotments into pastures would also improve calf crops by improving breeding success. The cows would be concentrated and more available to the bulls (Johnson and Smoliak, 1979).

Where rest rotation systems were not applied, livestock production would be reduced for 1½-2 years on burned or mechanically treated allotments to allow for deferment of the treatment area.

Crested wheatgrass on early spring pasture provides nutritious forage 3 weeks earlier than native range (Wildon, Thomas and Jacobson, 1971). The per-acre gains would be increased by about 50% where crested wheatgrass would be used as spring pasture (Johnson and Smoliak, 1979). A danger of bloat exists if alfalfa is interseeded with treatments but no loss with this practice has been reported to date (Ryerson, 1980, Personal Communication).

The forage increase from mechanical treatments with the higher protein content of forage would result in doubling or tripling the per-acre gains and maintenance of individual animal gains.

Vallentine (1971) recommended that water supplies be placed so cattle would not have to trail more than 1 mile to water and Mackie (1970) reported almost no livestock use of water at distances greater than 1 mile. Proper placement of water sources would contribute to increased livestock productivity.

Wild Horses

Wild Horse Management

Controlling the available water sources would result in better horse and grazing distribution. However, this would also be a minor infringement on the wild and free roaming behavior of the animals.

Overall production of foals for the wild horse herd now averages approximately 25% of the total population. This means that about 30 head of horses need to be excessed annually at an average removal cost of $692 (120 adult horses X 25% reproduction rate).

The herd's sex and age distribution has a direct bearing on the reproduction capacity and rate of the animals. The higher number of breeding age females in a herd, the higher the reproduction rate. Allowing older horses to die naturally, in lieu of excessing, would reduce the reproduction capacity and rate within the population. This in turn would reduce overall population reproduction and reduce the number of animals requiring excessing each year.

Boundary fencing would have no impact on horse movement within the range. However, interior fence projects would impact the free roaming status of the wild horse population.

Timber Management

Timber management activities would disrupt wild horse movement in the short term. Any reduction in forest canopy, through timber harvesting, would increase forage production in the long term and would increase the carrying capacity of the range.

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Classification

Removing the existing classifications on the horse range may increase minerals exploration and development activities. This would disrupt the wild and free roaming character of the horses, change the horses' social structure and lower the reproduction rate.

Wild Horse Interpretation

Development of a wild horse interpretive area would adversely impact horse behavior in the short term. Such a disruption would cause the horses to concentrate in areas with minimal human activity and cause excessive forage consumption in those areas.

Wildlife (Terrestrial)

Grazing Management

Grazing treatments which provide spring rest or deferment improve the quality and quantity of big game forage (Mackie, 1970; Knowles, 1975; and Komberec, 1976). Rest or deferment grazing treatments would make forage (especially forbs) more available to big game species in the spring. In the long term, periodic spring deferment would make succulent green forbs and grasses available to deer, antelope and elk; improving the physical condition of the females during gestation and lactation (Verme, 1969).

Upland game birds require the residual or "carry over" vegetation, provided in areas of light or no grazing, for nesting and winter survival. Through the use of grazing systems or treatments to provide greater distribution of cattle, residual cover in the current low and no use areas would be decreased. However, this would allow for greater vegetative production in the current high use and concentration areas to help offset the loss.

Additional residual vegetation from greater vegetative production due to the use of grazing systems and land treatments would help satisfy the needs of upland nesting waterfowl. Adequate residual vegetation for nesting and brood rearing would be available where there is dense cover, i.e., near reservoirs in rested and deferred pastures (Berg, 1956; and Johnson, et al., 1978).

The quality and quantity of nongame forage and cover would likely increase as a result of the implementation of coordinated grazing management systems. This would be reflected in an improvement in the abundance and diversity of nongame species.

Vegetative manipulation would alter the wildlife population density and diversity in the treated areas. Large mammals would be displaced temporarily, but should benefit within 2-3 years from increased succulent forb and grass production in the spring. Some non-crucial antelope winter habitat and upland game bird nesting habitat may be lost in the short term. The increased spring forb and succulent grass production would be beneficial to many game and nongame species during the spring and summer months. Nongame species would be temporarily displaced, but the increased vegetative diversity is likely to enhance wildlife species diversity and abundance in the long term.

The construction of structural developments such as reservoirs, water catchments, wells and fences would displace wildlife species temporarily due to habitat disruption and increased human activity. Providing additional watering sources through the coordinated management plan approach should prove to be valuable to wildlife populations and habitat. However, water developments can be quite detrimental, particularly to mule deer and sharptail grouse when they occur in coulees near the terminal portions of larger ridges or near smaller ridges where the area available for cattle dispersal on primary range types is limited (Mackie, 1970). Fences would be constructed in a manner to minimize movement barriers to big game, by utilizing standards outlined in BLM Manual 1737.

Wild Horse Management

Observations by BLM personnel indicate minimal social conflicts between big game species and wild horses.

Keeping wild horse populations in balance with available forage would allow the range conditions to improve. This improved vegetative condition would provide increased forage for big game and a greater diversity of vegetative composition which would expand and diversify nongame species.

Water availability is a major influence in the distribution of wildlife on the horse range. The addition of new watering sources would expand the available habitat for mule deer, bighorn sheep and numerous nongame species.

Additional fences within the horse range could cause minor adverse impacts to the movement of mule deer and bighorn sheep.

Wildlife

Not all actions or improvements proposed would benefit all species of wildlife. The proposals have been made to benefit selected species and their habitats which display the potential for development or habitat enhancement. There would be a short-term movement of wildlife species to other areas during the physical development of the proposed facilities due to the social intolerance of humans and wildlife. Additionally, small amounts of habitat would be disturbed or destroyed as projects are installed.

Timber

During logging activity, wildlife would move to other areas to avoid the increased human activity and harassment. Some big game escape cover would be lost in the short term. The areas where logging activities are proposed support very dense stands of timber, much of which has become infested with pine bark beetles. Harvested areas will be designed in such a way as to minimize adverse impacts to resident wildlife. Old snag trees will be left in an effort to continue providing habitat for cavity nesting nongame species. The harvest projects proposed will create numerous small openings in the canopy which will greatly increase the "edge" effect of the area. This will provide increased forage availability for turkeys, mountain grouse and numerous big game species while still providing escape cover.

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Coal

No impacts to the wildlife resource would be realized in the short term. As mining activity was initiated, habitats for resident species of wildlife would be disturbed or destroyed by the construction of support facilities. Habitat destruction could decrease the population levels of some resident wildlife species. This would also cause the movement of wildlife to areas of less disturbance. Additionally, with the projected peak production level in the long term, approximately 21 acres annually could be disturbed or destroyed. This could affect a total of 365 acres during the life of this plan (25 years).

It is anticipated that total restoration of the disturbed habitat occurring in the ponderosa pine vegetative type would not be accomplished during the life of this plan. Studies are currently underway at active mines in the Sarpy Creek (southcentral Montana) area to monitor success and rate of response of this vegetative type.

Oil and Gas Leasing

The construction of access roads and drill pad sites would cause a short-term loss of habitat. During the drilling process, the physical presence of machinery and associated activities would cause the movement of wildlife from the area. However, most potential impacts are mitigated with standard stipulations attached to the application to drill permit.

Land Tenure Adjustment

The sale of public lands could mean the loss of BLM control of some wildlife habitat. The program also offers the potential for the exchange of lands having equal or greater wildlife habitat values that would benefit from public ownership.

Classifications

Classifications restricting mineral entry protect habitat from surface disturbing activities. If the restrictions imposed by classifications are lifted and mineral exploration occurs, wildlife habitats would be destroyed through the development of facilities and access roads. Wildlife species in the area would also move to other areas during development due to the levels of harassment.

Recreation Access

Increases in recreational access can cause a gradual decline in habitat condition of those areas utilized. Movement of wildlife species from the area would also occur due to social intolerance of the human activities.

Off-road Vehicle Use

Off-road vehicle use causes the destruction of habitat for some resident species of wildlife. Additionally, the increased activity and presence of humans would cause a short-term movement of species from the area due to social intolerance.

Environmental Education

The physical presence of humans and associated activities would cause a short-term movement of wildlife species from the area.

Wilderness

Designation of an area as wilderness ensures the long-term protection of the current terrestrial and aquatic habitats, and other resource values, from disturbance or destruction caused by such things as mineral development, timber harvest and project construction. From the standpoint of wildlife habitat preservation, wilderness designation is beneficial. However, the designation of an area could also affect the ability of managers to manipulate habitats or construct new facilities which could enhance habitat or make additional habitat available.

If the study areas are not designated as wilderness, there is a long-term potential for damage to both terrestrial and aquatic habitats through resource uses such as timber harvest and mineral development.

There would be no significant impacts on the fisheries, or threatened or endangered species in any of the study areas or units since no wildlife facility developments are planned in any of the study units.

The mere designation of a block of land as wilderness does not automatically imply either benefit or detriment to wildlife. A large block of land without vehicle access provides a secure area for wildlife. On the other hand, the lack of vehicle access to large blocks of land often results in the loss of game harvest as a wildlife management tool.

Wildlife (Aquatic)

Grazing Management

Shorelines bare of vegetation are prone to accelerated erosion and allow more sedimentation in reservoirs. Grazing treatments with the spring grazing of crested wheatgrass, mechanical treatments, fencing of reservoirs and construction of new reservoirs would increase shoreline vegetation. Rest rotation would also increase shoreline vegetation (Gyersing, Frank, Journal of Range Management, V. 28, No. 1, January 1975, p.p. 37-42). This is applicable to developed reservoirs.

Mechanical treatments are designed to hold precipitation and increase infiltration (Ryerson, et al., 1980). The effect of holding water in place is to decrease runoff and prevent reservoirs from filling with sediment as rapidly as they would otherwise. Reservoirs with low water levels are much more prone to summer and winter fish kills so snow harvesting should be used in areas where runoff is reduced by mechanical treatments. Mechanical treatments also provide additional vegetation that would improve livestock distribution and could relieve some of the grazing pressure around fishing reservoirs. This would slightly improve the quality of the fisheries.

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Additional water sources in pastures with fisheries would more evenly distribute livestock and slightly reduce livestock concentrations around shorelines of the fisheries reservoirs.

Numerous studies have documented the effects of grazing on the aquatic ecosystem (Duff, 1977; Marcuson, 1977; Behnke and Zarn, 1976; Platts, 1978; and Behnke and Raliegh, 1978). Impacts such as sedimentation, changes in channel morphology, nutrient loading and increased water temperature are some of the factors that deteriorate due to livestock grazing on streambanks or reseryoir shorelines.

Wild Horse Management

Keeping the wild horse population in balance with available forage would allow vegetative conditions to improve, watershed conditions to stabilize and reduce the sediment runoff into Crooked Creek and established reservoirs.

Reduced sedimentation would help maintain and protect spawning sites in Crooked Creek. Likewise, streamside vegetation would be maintained or improved helping to stabilize streambanks, provide shade and filter overland flow.

Timber

In the short term, some increased water yields and erosion, resulting in greater sediment yields and organic debris to the associated aquatic resources, could occur. However, as the cutting unit revegetated, a gradual improvement would take place.

Coal

Potential leasing and development by surface mining could cause a short-term local loss of groundwater and/or an increase in the total dissolved solids (TDS) levels. It could also increase short-term erosion, resulting in increased sediment yields to associated aquatic resources such as streams and reservoirs. Before a mining plan can be approved, however, the mining must show how discharges off the mine site are to be controlled under applicable state and Federal laws.

Oil and Gas Leasing

Impacts to the aquatic resources could include increased erosion and sedimentation primarily due to the removal of upland vegetation during road and drill pad construction. Contamination of groundwater resources and degradation of aquatic ecosystems due to spillage could also occur during the drilling operation.

Classifications

Classifications also protect terrestrial habitats and aquatic resources from disturbances associated with mineral entry and development. If the classifications are lifted and mineral development occurs, increased erosion and greater sediment yields deposited in the associated aquatic resources (i.e, reservoirs and streams) could occur due to the loss of upland vegetation and deteriorated watershed conditions.

Recreation Access

With the anticipated gradual decline in vegetative cover along streambanks due to increased human use, degradation of the aquatic resources would gradually occur as erosion and sediment yields increase.

Off-road Vehicle Use

Off-road vehicle use causes the destruction of vegetation and degradation of range condition. Increased erosion would occur as range conditions deteriorate, causing increased sedimentation and decline of the associated aquatic resources.

Recreation

Grazing Management

Vegetative manipulation (sagebrush burning and mechanical treatments) should improve wildlife habitat; increase wildlife populations and improve hunting opportunities.

Constructing range improvements (fences, some water developments) would restrict some recreation access and wildlife movement. Winter, spring and yearlong grazing may deteriorate wildlife habitat. Both would result in a minor decrease in hunting opportunities.

Wild Horse Management

Impacts caused by vegetative manipulation and fencing would be similar to those discussed above. Acquisition of private land within the horse range would provide long-term public access to these areas.

Wildlife Management

Any activities to improve wildlife or aquatic habitat may produce a corresponding increase in wildlife populations and fishing and hunting opportunities. Fence construction would cause similar impacts as those discussed under grazing management.

Timber Management

Selective timber harvest would benefit some wildlife species such as deer and elk by providing an edge effect. Increases in big game numbers could enhance hunting opportunities.

Coal

Overall, the effect would be minimal under the scenarios predicted. People employed by mining would be local hire or commute from larger communities such as Billings. Demand for increased recreational opportunities would be significant.

Oil and Gas Leasing

Exploration operations may affect wildlife habitat and decrease hunting opportunities. Road construction may provide additional recreation access into public lands.

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Land Tenure Adjustment

The sale of public land would result in a loss of recreational opportunities associated with that land. Conversely, exchanges or exchange pooling for high quality recreational lands would increase opportunities. This would be particularly true of floating, hunting and fishing opportunities if selective land tracts were acquired through exchange along the major rivers in the resource area.

Classifications

Mineral segregations prevent habitat destruction, thereby benefitting wildlife populations and hunting opportunities.

Recreation Access

Increasing access to public lands would help BLM to meet the local and national demand for recreation lands.

Off-road Vehicle Use

Off-road vehicle designations generally restrict the use of an area, thus concentrating use on available lands.

Wild Horse Interpretation

Interpretation would benefit recreationists who visit the Pryor Mountains by providing information about wild horse management and boundary locations.

Wilderness

Wilderness designation would prohibit off-road vehicle use in the study areas or units. Hunters using vehicles to retrieve game would be especially affected.

The overall effect of closures is limited by the low use these areas received for recreational activities, other than hunting. Hunting and other recreational activities could continue in designated wilderness, but the mode of transportation would have to change from vehicle-based to foot or horseback.

Designation as wilderness would enhance all types of compatible, non-motorized recreation including hiking, walk-in hunting, camping, fishing, sightseeing and other activities.

There would be a benefit to visual resources in areas designated as wilderness since any surface disturbing activities would be limited or not allowed. In areas not recommended for wilderness, visual resources could be adversely impacted by continuing multiple use activities.

Visual Resources

The major factor creating a negative impact to the visual resources in these four alternatives is the extent of surface disturbances in the short term. Long-term impacts would depend on the capability of the disturbed areas to recover from these disturbances. Any developments or grazing systems implemented to stabilize soils and increase vegetation would improve scenic quality.

Table 4.1 displays the average unmitigated impacts of selected developments under each of the four visual resource management classes (VRM I, II, III, IV) in the resource area.

Very few, if any developments are proposed within Class I or II landscapes with the exception of those in the Pryor Mountain Wild Horse Range. To conform with guidelines of these two classes, it's anticipated that any project would create a medium to high impact. This would be especially true if a protective withdrawal was not approved for the Pryor Mountain area and mineral development occurred.

Class III and IV landscapes, such as those on public lands in the north half of the resource area, would be the VRM classes most affected by the majority of the proposed developments. Most impacts are rated low because the projects could be accomplished within the guidelines for these two classes.

Cultural Resources

Cultural evidence is meaningful largely in relation to the degree that the site from which it comes has remained undisturbed. An artifact or feature might be important, but the association or context in which it was found may be equally or much more significant. When sites are disturbed, the opportunity for analysis by the archeologist or historian is lost as is important information about the past.

Constructing range facilities, water developments, mines, roads, drill hole pads and plowing, seeding and scalping can cause significant adverse impacts to a cultural site. This is because the site is altered by ground disturbance, and thus loses its integrity. In addition, disturbance can occur to sites through vandalism, artifact looting, livestock trampling and ORV traffic.

Ground cover can be improved by forage allocation, grazing treatments, chemical treatments, limited ORV access in certain areas, prohibiting road construction and limiting recreational impacts. These activities do not cause significant surface disturbances and should improve the preservation of cultural resources by improving or stabilizing the conditions which maintain a site's integrity. However, no data exists which allows quantification of such a benefit.

Wilderness designation would substantially limit the potential for surface disturbance and help protect undiscovered sites. Road closures would tend to limit the number of people entering an area and removing or damaging a cultural site. Certain educational efforts, undertaken as part of wilderness management, would tend to enhance the appreciation for cultural features and human history. The BLM Wilderness Management Policy provides for recording and monitoring cultural resources. Salvage of cultural sites is allowed, if necessary, to protect the resource.

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TABLE 4.1: RELATIVE LEVEL OF IMPACT TO VISUAL CLASS BY PROJECT

Projects	Major Contrasting Elements	Feature Type	Class I	Class II	Class III	Class IV
Wells-Springs-Tanks	Color Form	Structure	H	H	L	L
Pipeline (buried)	Line	Vegetation Landform	M	M	L	L
Reservoirs-Water Catchment	Form Line	Landform Structure	H	H	M	L
Shade Sources (structure)	Form	Structure	H	H	M	L
Oilers-Salt	Form	Structure	H	L	L	L
Fences-Cattle Guards	Line	Structure	H	M	L	L
Vegetative Manipulations	Line Color Texture	Vegetative	H	H	L	L
Mowing	Line Texture	Vegetative	M	L	L	L
Burning	Line Color Texture	Vegetative	H	H	L	L
Spraying	Line Color Texture	Vegetative	H	H	L	L
Fence Line Contrasts	Line Color	Vegetative	H	M	L	L
Roads-Trails	Line	Landform	H	H	M	L

*All impacts are negative and measured at the time of the project.

H—High
M—Moderate
L—Low

Source: 8400 Manual—Recreation Specialist—EIS Team

Wilderness (Areas Recommended for Designation as Wilderness)

Wilderness Opportunities

The need for additional wilderness opportunities for urban dwellers within 5 hours driving time of the four areas in this study is a consideration in their overall suitability for wilderness designation. As summarized in Appendix 3.7, abundant wilderness is available in the three state region. There has been minimal support for additional wilderness by local residents in southcentral Montana and northern Wyoming based on letters and comments received since the inventory began in 1978. Some local groups strongly oppose additional wilderness in the area. There has been support for several of the areas from state and national wilderness advocacy groups that would like additional wilderness protection wherever possible.

Ecosystem Representation

The addition of the BLM study units or areas to the National Wilderness Preservation System (NWPS) would be an advantage to balancing the diversity of the national system, but because of the number of other units pending designation, would not be a major consideration affecting the suitability of any particular study unit.

Wilderness (Areas Not Recommonded for Designation as Wilderness)

Any opportunity to expand the size and diversity of the NWPS would be foregone if none of the study areas or units were designated.

Social

Grazing Management

Changes in BLM grazing would impact ranch income and permit values which in turn would have an effect on the social well-being of families who depend on these ranches. Any increases in ranch income would raise the standard of living. The social well-being of small livestock operators has the greatest potential for being impacted since some of these people are currently earning a minimum income and any change could have an effect on their standard of living.

Coal

The social impacts from coal development are based on population information provided by the E/D model (see Economics, General Impacts) and the Guide to Social Assessment, developed by Mountain West, Inc. This document is on file at the Montana State BLM Office, 222 N. 32nd Street, Billings, Montana. See Appendix 4.8 for a further explanation of the social methodology.

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Attitudes

None of the alternatives would change the general attitudes or values presently held by the residents of the Billings Resource Area but they could affect attitudes toward and expectations of BLM and the Federal Government in general. Some issues addressed in these alternatives could elicit reactions from individuals or groups affected by the proposals.

Economics

Grazing Management

This section analyzes the direct effects of increases and decreases in grazing on ranch income and permit values in the EIS area. The economic impact on ranch income caused by changes in grazing for the four representative ranch types (see Ranch Related Economics, Chapter 3) was determined through a linear programming model (see Appendix 3.9). All income information is calculated from these average budgets. Although the term "representative ranch" is used, the region has no real representative ranch. Each operation is unique. The impact on individual ranch incomes varies by the dependency on BLM grazing, the amount of the change in BLM grazing, the size of the operation, the way the operator would adjust the ranch operation to changes in grazing and the amount of cash crops raised. Changes in income are calculated on the assumption that ranch operators would adjust herd sizes in response to changes in AUMs. However, some operators might prefer to extend their grazing season to use additional AUMs. Other individuals might elect to feed cattle in response to decreases. In these cases, herd size would not change.

The impact on ranch income is measured only by the change in the number of BLM AUMs. Economic benefits can also be produced by such qualitative changes as improved range condition and water distribution (Kothmann, 1970). Benefits can include heavier calves, increased calf crops and possibly even reduced death losses. It is entirely possible that a ranch operator, even though he reduces the size of his herd, may end up selling more pounds of beef in the fall because of these economic factors.

Grazing systems would increase the cost to ranch operations through increased fence maintenance, increased efforts in monitoring forage conditions and more movement of livestock. These costs are included in the ranch budget models (see Appendix 3.9).

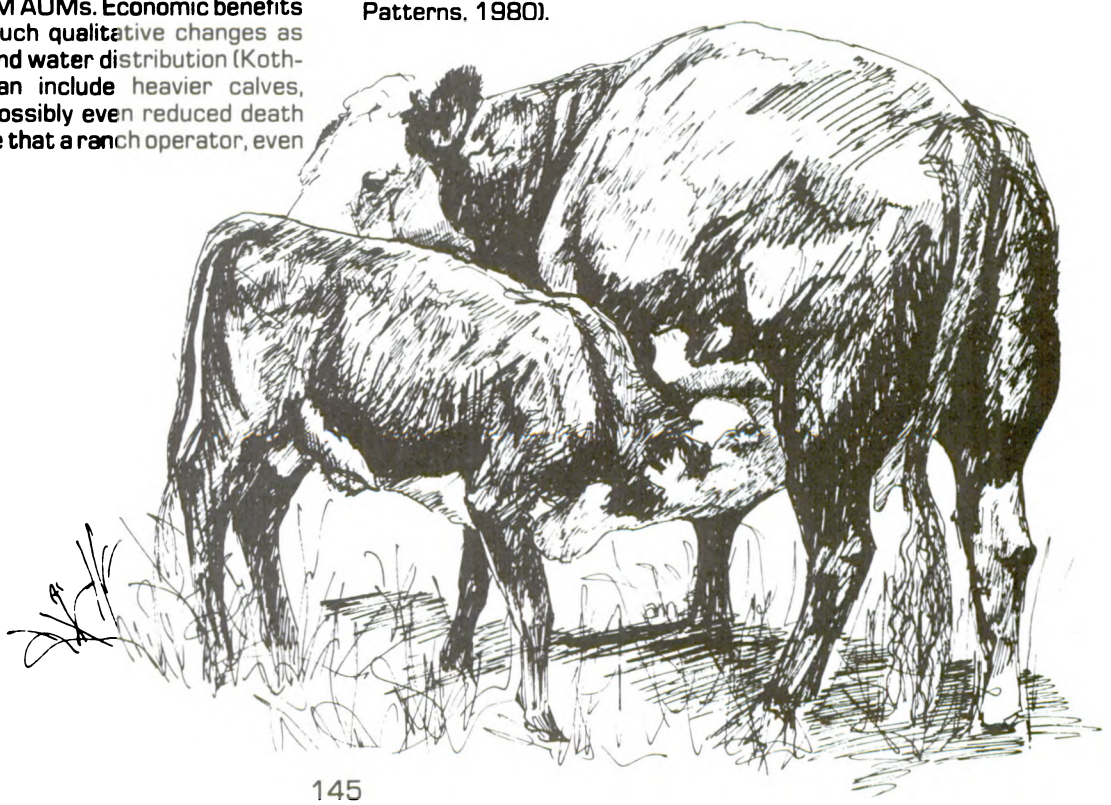
Adjustments in BLM grazing would affect the total value of BLM grazing permits. The market value of the BLM permit is presently estimated to be $100 per AUM (see Ranch Related Economics, Chapter 3) and a change would cause a loss or gain in the capital position (wealth) of affected ranches. This change would be realized as cash only if the ranch or a portion of the ranch is sold, transferred or used as collateral for a loan.

Coal

The potential exists for increased coal leasing and development in the Low, High and Preferred Level Management Alternatives. The BLM Economic and Demographic model was used to assess the impacts of coal development within the Billings Resource Area. Appendix 4.1 provides further explanation of the E/D model and the economic analysis conducted. Impacts from coal development are discussed in the economic impacts for the alternatives.

Oil and Gas

With the potential for oil and gas or locatable mineral discovery being extremely low and with little interest in exploration, there would likely be no significant impacts to the economy of the resource area. In 1980 less than 2% of the labor force in the resource area was employed in oil and gas extraction (County Business Patterns, 1980).



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PROPOSED PLAN

The Proposed Action for each issue area was made after consideration of the cumulative impacts to other resources and social and economic benefits as displayed in the Continuation of Existing, Low and High Level of Management Alternatives. The Proposed Action is a selection of portions of other alternatives or a previously described alternative which presents the best mix of resource considerations and most favorable economic and social factors.

Minerals

Coal

Impacts to the coal resource would be the same as those described in the Low Level Management Alternative, though the area available for further consideration could be further constrained by locally important multiple use resource values which may be identified later in activity planning.

Oil and Gas Leasing

Designating approximately 70,000 acres as sensitive would result in a greater lapse time between lease expiration or termination and issuance of a new lease. It is probable that special protective stipulations would be applied to these areas. There is also the possibility that because of sensitive resource values, large areas within the Pryor Mountains may not be leased.

Land Tenure Adjustment

The disposal of small isolated public land tracts would have no direct effect upon mineral resource or development since minerals rights would not be disposed of or exchanged. The loss of surface control might constrain mineral access or development since the BLM or a mining company would have to obtain access into the tract. Disposal of surface parcels with valuable mineral interests would be carefully evaluated to determine if disposal would be feasible.

Classifications

Removing the C&MU classifications in the Pryor Mountains, with the exception of 980 acres, would have a minimal impact on mineral entry. The potential for discovery of mineral resources in these areas is considered low.

Recreation Access

Should additional legal access for recreational purposes be obtained, access for development of mineral resources would also be secured. This would increase BLM's latitude in developing saleable minerals (rock, sand or gravel).

Wilderness

Wilderness designation of the Pryor Mountain Wilderness Study Area (WSA) and segments of the Big Horn Tack-On and Burnt Timber Canyon Wilderness Study Unit (WSU) would prevent further exploration for mineral resources at the time of designation. Restrictions to mineral exploration and development would apply until Congress acts on the two areas recommended for inclusion in the wilderness system. At that point, only valid claims located prior to the passage of FLPMA could still be developed.

Conclusion

The designation of approximately 70,000 acres as sensitive to oil and gas leasing could constrain mineral exploration and development.

Obtaining legal access for recreational purposes would allow access for exploration and development of saleable minerals. The potential for saleable mineral deposits in the identified tracts is unknown.

The mineral segregation of 980 acres in three areas in the Pryor Mountains would have an insignificant effect on prospecting for locatable minerals.

There would be an irreversible and irretrievable loss of coal, oil, gas and other non-renewable resources to the extent that these resources are developed in this proposed action, however, the process could be halted at any time.

Soils/Watershed (Erosion and Runoff)

Grazing Management

Impacts from grazing and vegetative manipulation would be the same as those described in the High Level Management Alternative.

Wild Horse Management

Impacts from wild horse management on the Pryor Mountain Wild Horse Range would be the same as those described in the Continuation of Existing Management Alternative.

Wildlife Management

Short-term negative impacts to water quality would result from the construction of waterfowl nesting islands.

Timber Management

During and immediately following timber harvesting, erosion and runoff hazards would be similar to those discussed in the Continuation of Existing Management Alternative. Average runoff would be increased by 0.6 acre-feet since approximately 30 acres would be harvested annually. Potential hazards such as increased runoff and erosion are minimized due to the small land areas being harvested.

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Coal, Oil and Gas Leasing, Classifications, Recreation Access, Off-road Vehicle Use

The impacts would be the same as those described in the General Impact section.

Environmental Education

The impacts caused by developing an environmental education site near Acton would be the same as those described in the High Level Management Alternative under the Soils and Watershed discussion.

Wilderness

Wilderness designation would benefit the soils and watershed resources by eliminating surface disturbing activities.

Soils/Watershed (Water Quality and Streambank Protection)

The impacts to water quality and streambanks would be similar to those described under the High Level Management Alternative.

Conclusion

Grazing management, under this proposed action, would improve watershed conditions significantly. There would be 28,383 acres of vegetative manipulation to improve erosion susceptibilities and runoff potentials. Wild horse management would insignificantly benefit watershed conditions since erosion and runoff would decrease slightly. Due to the small area proposed for timber harvesting, impacts to watershed would be insignificant. The average annual runoff would be increased by 0.6 acre-feet in the cutting areas.

Development of an environmental education site would cause localized increases in erosion and runoff, but are considered insignificant.

Water quality and streambanks would improve under this proposed action. Short-term negative impacts to reservoir water quality would result from waterfowl nesting island construction. These impacts would be insignificant in the long term. Physical access to rivers could cause small segments of increased streambank erosion. Off-road vehicle use could cause insignificant impacts to soils and watershed.

The loss of soil in this proposed action due to erosion would be irretrievable but not irreversible. There would be no irretrievable or irreversible loss of water resources.

Vegetation

Grazing Management

Impacts to vegetation would be identical to those described in the High Level Management Alternative.

Wild Horse Management

The 1981 Ecological Site Inventory of the 38,213 acres of the Pryor Mountain Wild Horse Range (PMWHR) in Montana indicated that 2,775 acres are in good condition, 12,498 acres in fair, 7,900 acres in poor and the remaining 15,040 acres are unsuitable for wild horse grazing. It is anticipated that controlling populations of horses at the initial stocking level (approximately 121) and improving grazing distribution by controlling their access to water sources would allow range conditions to be maintained with a slight improvement trend. The additional 6,083 acres of the PMWHR in Wyoming, estimated to be in fair and poor condition would be maintained. These acreage figures include BLM, Forest Service, National Park Service, state and private lands which are not part of the designated PMWHR.

Wildlife Management

Fencing of four reservoirs and planting 25 acres of dense nesting cover would have insignificant beneficial impacts to the vegetative resource.

Timber Management

An average of 70 thousand board feet of timber, which includes 30 acres of the Twin Coulee WSA, would be harvested annually under this proposed action. However, some sales may approach 1 million board feet (MMBF) and impacts to vegetation could be significant in the short term because of skidding and road construction. In the long term, impacts would be mitigated through stipulations limiting logging activity to slopes less than 30% and the reseeding of grasses and forbs on skid trails and roads (Programmatic EAR #MT-060-06-8-18).

Coal

Impacts would be the same as the Low Level Management Alternative though the area available for further consideration might be reduced due to additional multiple use trade-offs.

Oil and Gas Leasing

Oil and gas development and production would disturb approximately 30 surface acres per year. This would be insignificant to vegetation in the long term.

Classifications

Partial revocation of the classification and multiple use (C&MU) classifications on the Pryor Mountain Wild Horse Range will result in minor surface disturbance and loss of vegetation due to locatable mineral activities. This would be of short-term duration and is considered insignificant.

Conclusion

A variety of methods, in addition to grazing management, are proposed to correct current unsatisfactory range condition under this proposed action. The highly significant impacts to vegetation for the "I" allotments are the same as those listed in the High Level Management Alternative.

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For the "M" and "C" category allotments, the acres improved from fair and poor to good condition through vegetative manipulations: 4,440 acres.

Wild horse management under this proposed action would result in maintenance of current ecological conditions with a slow upward trend.

Timber management, coal development, oil and gas development and C&MU classifications proposals would have insignificant impacts on vegetation.

There would be no irreversible or irretrievable loss of vegetation resources in this proposed action.

Livestock

Grazing Management

Impacts under this proposed action would be the same as those described in the High Level Management Alternative.

There would be no irretrievable or irreversible loss of livestock resources in this proposed action.

Wild Horses

Wild Horse Management

The maintenance of present watering facilities and constructing five new water catchments for the purpose of controlling available water and stimulating better grazing distribution would be a minor infringement on the wild and free roaming behavior of the wild horses.

The construction of 2 miles of fence for the purpose of improving the efficiency of capturing horses and 5 miles of fence for fencing the south boundary of the horse range would be a minor impact to the wild and free roaming behavior of the wild horses.

Maintaining current age class structures, colors and other genetic traits by excessing horses would result in a higher quality breeding herd. This would be a minor short-term disruption of normal wild horse habits and behavior.

Selection for conformation, color and genetic characteristics typical of the Pryor Mountain wild horses would produce good quality horses.

Under this proposed action the wild horse carrying capacity could increase due to improved distribution and moderate grazings. However, projected long-term improvement in range condition is minor (see Vegetation Impacts), so increases in horse population would also be minor.

Controlling the sex ratio favoring studs and maintaining the number of reproductive age mares at no more than 50% of the female population would yield a 10 to 15% annual reproduction rate. This would reduce the number of horses to be excessed annually since most would be retained to replace normal annual death loss. Balancing the number of horses in with the proper grazing capacity of each herd area would produce and maintain a healthy, viable breeding herd.

The loss of private land inholdings could have a significant impact on future management. The loss of these lands, which amounts to 2,240 acres, would reduce the range of the horses. This would require a similar reduction in numbers. It would also constrain future management options for the horses and the habitat.

Wildlife Management

In order to achieve wildlife objectives, it may be necessary to induce wild horse movement so that grazing on an area occurs during a prescribed season. This would have minimal effects on the wild horses but could increase maintenance and operational costs for wild horse management significantly.

Timber Management

In the short term, timber harvest activity to benefit other resources would cause the horses to move from the higher elevations. This would impact the lower elevation range because of the heavier grazing pressure and would result in a potential for increased loss of soil productivity due to wind and water erosion.

In the long term, selective timber harvest within the heavily timbered areas of the horse range would benefit wild horses and horse management.

Thinning existing stands would provide an opportunity for growing additional forage for the horses. More open stands reduce the ability of the horses to hide and escape during capture efforts and data collection processes.

Oil and Gas Leasing

Under this proposed action, lands within the Pryor Mountain Wild Horse Range may be leased with special stipulations for oil and gas exploration or development. However, based on site-specific analysis, there is also the possibility of large areas remaining unleased. Large areas may not be leased because access road construction and exploration operations could impair BLM's ability to monitor and gather wild horses, and may alter the horses' wild and free roaming behavior. The general public has the perception that the horse range is a preserve for wild horses in a wild setting. Oil and gas exploration is inconsistent with that belief.

Classifications

Partial revocation of the three Classification and Multiple Use classifications in the Pryor Mountains could result in potential mineral exploration. Mineral exploration and development has the potential to alter normal wild horse behavior. These activities may also interfere with the wild horse capture process if both are occurring simultaneously. This would be a short-term impact and not significant. However, the discovery, development and production of minerals would cause long-term significant impacts. The behavior patterns of the wild horses would change and capture operations would have to be altered. The intrusion of developments would degrade the open space, wild horse range atmosphere and natural environment.

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Wilderness

There could be minor long-term effects on wild horse management. Restrictions on new water developments, depending upon location and visibility, could result in continued grazing distribution problems and slower rates of habitat improvement. Future fencing needs (now unforeseen) within the horse range could be foregone in order to preserve the natural setting.

Conclusion

Constructing watering facilities in the Pryor Mountain Wild Horse Range would provide better grazing distribution, thus maintaining range conditions with a slight upward trend. Fencing would improve efficiency in capturing wild horses. Both actions would have insignificant impacts to the wild and free roaming behavior of the horses. Controlling populations, sex ratios, age class structures and other genetic traits would maintain a healthy, viable breeding herd of wild horses.

Acquisition of non-public lands in the horse range would facilitate future management by consolidating ownerships.

Achieving certain wildlife objectives may significantly increase maintenance and operational costs for wild horse management.

Protection from timber harvesting would significantly enhance the horses' wild and free roaming behavior.

Designating the area sensitive to oil and gas leasing would protect the wild horses from negative impacts associated with such activities and would be in keeping with public perceptions concerning management of the wild horse range.

Partial revocation of the C&MU classifications could result in potential locatable mineral exploration, development and production, except for the areas totaling 980 acres that would remain under the existing classification. Exploration or development could significantly alter wild horse behavior and also interfere with capture processes.

Designation of study areas recommended as suitable for wilderness could have minor impacts to wild horse management by reducing management options.

There would be no irreversible or irretrievable loss of wild horses in this proposed action.

Wildlife

Grazing Management

Impacts from grazing management would be the same as those described in the High Level Management Alternative.

Wild Horse Management

Impacts from wild horse management would be the same as those described in the Continuation of Existing Management Alternative.

Wildlife Management

Impacts from wildlife would be the same as those described in the High Level Management Alternative with the exception that chukar partridge habitat could be impacted by 1,600 acres.

Timber Management

In the short term, timber sales up to 1 MMBF in the Twin Coulee area would result in significant negative impacts to wildlife. Species such as deer, elk and bear would be forced to relocate to other areas. In the long term, timber harvest would open canopy cover, create conditions more favorable to browse species, and improve habitat conditions for deer and elk. As a general rule, however, it's anticipated that an average of 70 MBF annually, on 30 acres, would be harvested.

Coal

Coal reserves identified in the Bull Mountain coal field underlays a total of approximately 5,700 acres of elk winter range and approximately 22,800 acres of mule deer and turkey yearlong range. However, only approximately 1,680 acres of elk winter range and 1,960 acres of mule deer and turkey yearlong range overlays the coal reserves which are being carried forward pending further study and final application of the Federal coal unsuitability criteria. Future development of these reserves could affect a long-term maximum of 6% of the elk winter range and 2% of the mule deer and turkey yearlong range assuming an anticipated disturbance of 21 acres annually beginning the 12th year of this plan. Maximum total disturbance during the life of this plan could potentially approach approximately 365 acres. This impact would have little significance to the total available habitat. However, there would be additional habitat disturbances occurring away from the mining site associated with development of access roads, movement of equipment and transportation of the coal.

Land Tenure Adjustment

Impacts from land tenure adjustment would be the same as those described in the High Level Management Alternative.

Classifications

Protecting 980 acres in the Pryor Mountain area from mineral entry would not have a significant impact on terrestrial habitat. However, since the portions of the classification which would remain in effect are associated with three springs on the horse range, it would provide some slight protection from potential surface disturbances that may degrade the aquatic habitat.

Recreation Access

Impacts would be similar to those described in the High Level Management Alternative.

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Off-road Vehicle Use

Off-road vehicle impacts would be similar to those discussed in the Continuation of Existing Management Alternative except that as new access is acquired, restrictions would be implemented to limit ORV use to specific roads and trails. These restrictions would benefit wildlife by reducing man-animal encounters and prevent indiscriminate loss of wildlife habitat from cross-country vehicle travel.

Oil and Gas Leasing

Oil and gas development and production would disturb approximately 30 surface acres per year. This would be an insignificant impact to wildlife in the long term, since these activities would be conducted in a manner which would minimize adverse impacts. Road construction would be held to a minimum and roads could be closed seasonally.

Wilderness

Designation of the Pryor Mountain WSA and a portion of the Burnt Timber Canyon and Big Horn Tack-On WSUs would provide security to some wildlife species, particularly bighorn sheep and mule deer in the Pryor Mountains. However, some opportunities for wildlife improvements in these areas may be foregone. Returning the Twin Coulee WSA and portions of Burnt Timber Canyon and the Big Horn Tack-On WSU to non-wilderness management would result in greater opportunities for wildlife improvements. Some species could be impacted by actions such as timber harvest, recreational access, mining or recreation use, however, this is not thought to be a significant impact to wildlife.

Conclusion

Burning 21,520 acres of sagebrush could adversely affect 18% of Federally managed winter antelope range and 25% of the known sage grouse dancing grounds. Eight percent of the total chukar partridge habitat might be affected. However, annual vegetation created by burning could benefit chukars.

Improving the woody floodplain zone through grazing management and livestock and wildlife water development would significantly improve wildlife habitat.

Maintaining proper stocking levels of wild horses in balance with available forage could improve range condition and wildlife habitat in the Pryor Mountain Wild Horse Range.

Five water catchments would increase available chukar partridge range by 1,600 acres. Constructing 50 waterfowl nesting islands, fencing reservoirs and seeding dense nesting cover would result in a significant annual increase of 350 ducks.

Timber harvest could result in the loss of wildlife habitat in the short term. In the long term, increases in browse species and opening canopy cover would be beneficial to wildlife.

Potential coal leasing with development could result in insignificant adverse impacts to wildlife resources in the long term. Through application of the coal unsuitability criteria, mining plans and strict reclamation stipulations, long-term impacts would be mitigated. However, there would be additional habitat disturbances occurring away from the mining site associated with development of access roads and transportation of coal.

Land disposal could result in a loss of BLM administered terrestrial and aquatic habitat. However, land exchanges for equal or greater values could enhance management of wildlife habitat.

Some increased habitat destruction and harassment of wildlife would occur from ORV use. Restricted ORV use on newly acquired access areas would reduce impacts to wildlife.

Oil and gas exploration would disturb 750 acres in the long term. Human activity would increase. This would result in insignificant impacts to wildlife.

There would be no irretrievable or irreversible loss of wildlife resources in this proposed action.

Recreation

Grazing Management, Wildlife Management and Recreation Access

Impacts would be the same as those described in the High Level Management Alternative.

Wild Horse Management

Impacts would be the same as those described in the Continuation of Existing Management Alternative.

Timber Management

Impacts to recreation under this proposed action would be insignificant.

Land Tenure Adjustment

Impacts would be the same as those described in the General Impact section.

Off-road Vehicle Use

Five new roads would be open for recreational use, therefore increasing off-road vehicle opportunities.

Wilderness

Certain forms of recreational use associated with vehicular use would be eliminated. Other forms of recreation such as backpacking would be enhanced by wilderness designation.

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Conclusion

Range and wildlife habitat conditions would improve significantly, resulting in a probable increase in wildlife numbers and increased hunting opportunities. Reservoirs may be converted into fisheries as well as livestock watering sources.

Should BLM obtain access into the seven described sites, some of the local and regional demand for recreational access would be satisfied.

Off-road vehicle designations would have little effect upon overall recreational use of public lands since most activity is concentrated around Billings. However, leaving the majority of the South Hills area open would provide opportunities for use while significantly reducing the probability of conflicts between recreationists and adjacent landowners.

There would be no irreversible or irretrievable loss of recreation resources in this proposed action.

Visual Resources

Grazing Management

Impacts would be the same as those described in the High Level Management Alternative.

Wild Horse Management

Impacts would be the same as those described for the Continuation of Existing Management Alternative.

Wildlife Management

Impacts would be the same as those described in the High Level Management Alternative, with the exception that there would be 15 fewer water catchments constructed.

Timber Management

Impacts to visual resources would be insignificant except in the Twin Coulee area where large sales could occur. Timber harvest would be incompatible with maintaining the present Class II visual rating. High negative impacts would result in the short term. In the long term, visual aspects would be mitigated with reforestation techniques.

Coal

Visual impacts would be the same as those described in the Low Level Management Alternative.

Oil and Gas Leasing

Major portions of the horse range may be withheld from oil and gas leasing, resulting in positive impacts to visual resources.

The majority of this activity would occur in Class III visual areas outside the horse range. Disturbances would be in compliance with VRM classification guidelines.

Classifications

The C&MU classifications in the Pryor Mountain area currently provide protection to the visual aspects of the horse range. Removal of this classification from major portions of the range could result in negative impacts if mining were to occur.

Recreation Access

Acquiring access into seven additional public land areas would have a moderate impact to the visual resources. Restricting motorized use to the primary roadways would eliminate some of the impacts.

Off-road Vehicle Use

Leaving the majority of the roads in the Pryor Mountain area closed would protect the high visual resources present. Opening 9 miles of roads previously closed to ORV useage would result in insignificant impacts.

Wild Horse Interpretation

The placement of six signs along the periphery of the horse range would insignificantly impact visual resources.

Wilderness

Recommending the Twin Coulee WSA, part of the Big Horn Tack-On WSU and part of the Burnt Timber Canyon WSU as non-suitable for wilderness would allow the development of other resources which could significantly impact visual resources over the long term. This is particularly true of Twin Coulee if timber is harvested. Recommending the Pryor Mountain WSA and part of Burnt Timber Canyon and Big Horn Tack-On WSUs as additions to the National Wilderness Preservation System would preserve the visual qualities of these areas over the short and long term.

Conclusion

Negative impacts resulting from proposals under the grazing management, wild horse, wildlife management, oil and gas leasing, classifications, off-road vehicle use and wild horse interpretation programs would be insignificant.

If timber harvest occurred in the Twin Coulee area, short-term negative impacts would occur.

New recreational access proposals would result in moderately negative impacts. Non-wilderness recommendations have the potential to negatively impact the visual qualities of those areas in the long term.

There would be no irreversible or irretrievable loss of visual resources in this proposed action.

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Cultural Resources

Grazing Management

Discing, crested wheat seeding, spring developments and reservoir, water catchment, pipeline and well construction would disturb 1,842 acres. This total excludes 5,365 acres already planted in crested wheat and assumed to be presently disturbed. Nine cultural resource sites may be encountered. Seven sites would be avoided; two sites would be mitigated.

Wild Horse Management

Constructing water catchments would disturb 3 acres. There is less than 1% probability of encountering cultural resources.

Wildlife

Water catchment and fish pond construction would disturb 13 acres. There is a 2% probability of encountering cultural resources. Any site would be avoided.

Timber Management

Cutting 30 acres of timber a year would disturb 750 acres in the long term. One site may be encountered. The site would be avoided.

Coal

The impacts would be the same as those described in the High Level Management Alternative.

Oil and Gas Leasing

Drilling 10 wells a year would disturb 500 acres in the long term. Two sites may be encountered and both would be avoided.

Land Tenure Adjustment

The disposal of or exchange of approximately 49,809 acres may impact 168 cultural sites. Based upon current inventory information and professional judgment, it's assumed that 5% of sites located within the current assessed disposal and exchange area would be highly significant or rare and best kept within Federal ownership for the public. Therefore, eight sites would be avoided through ownership retention. One hundred and seventy remaining sites may or may not qualify for the National Register of Historic Places. Those that do would be mitigated if the budget permits (see Appendix 1.10) or transferred out of Federal ownership after consultation with the Advisory Council on Historic Preservation per 36 CFR 800. Those that do not qualify would be transferred along with the acreage.

Recreation Access

The BLM is unable to quantify recreational access impacts. However, vandalism to acquired or existing sites may result from recreational use.

Off-road Vehicle Use

Designating the Bear Spring, Timber Canyon, Water Canyon, Inferno Canyon and Demi-John Flat roads as open may contribute to deterioration, vandalism and looting of 20 sites, 6 of which comprise a National Historic District.

Environmental Education

Development of the Acton area may disturb portions of 60 acres. There is a 9% probability of encountering a cultural site. The site would be avoided.

Conclusion

Anything less than 5% probability of encountering a cultural site has not been computed.

The proposals in this alternative would disturb or impact 12,184 acres. One hundred and eighty-two sites would be encountered. Nineteen sites would be avoided; 3 sites mitigated; and 160 sites mitigated or transferred out of Federal ownership. Because of mitigating practices, these impacts are considered insignificant. Designating certain areas under this alternative as open to ORV use may contribute to vandalism, looting, unwarranted excavation and unauthorized camping impacts to 20 additional sites. Any site inadvertently destroyed in this alternative would be irretrievably and irreversibly lost.

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Wilderness

Grazing Management

Twin Coulee WSA—Impacts would be the same as those described in the High Level Management Alternative.

Wild Horse Management

Pryor Mountain WSA—There would be little impact on wilderness values. One of the five water catchments proposed to be constructed is within the WSA boundary, as is 2 miles of fence. These projects could be constructed without any impact to apparent naturalness of the area. Management of the wild horse herd would maintain range condition and be in compliance with the BLM Wilderness Management Policy and ensure the continuation of a healthy herd which would be a benefit to wilderness values.

Big Horn Tack-On WSU-Burnt Timber Canyon WSU—There are no proposed projects so there would be no impact on wilderness values.

Timber Management

Twin Coulee WSA—Impacts would be the same as those described in the Low Level Management Alternative.

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU—There would be no significant impacts in the three units as portions of the acreage would be protected from commercial harvest under this proposed action.

Oil and Gas Leasing

Twin Coulee WSA—The potential impacts would be the same as those described in the Continuation of Existing Management Alternative.

Pryor Mountain WSA, portions of Burnt Timber Canyon, Big Horn Tack-On WSUs—Impacts would be the same as those described under the High Level Management Alternative.

Wilderness Management

Twin Coulee WSA—Under this proposed action, the entire WSA would be recommended as non-suitable for wilderness designation. The opportunity to include the area in the NWPS would be foregone, but as described in Chapter 3, Evaluation of Wilderness Qualities, this area does not offer the outstanding quality and diversity to be managed as part of the national wilderness system. The wilderness values do not offset the potential economic uses of this area including timber production and mineral development (see Chapter 3 for a discussion of wilderness, timber and mineral values).

Pryor Mountain WSA—Under this proposed action, 16,927 acres would be recommended as suitable for wilderness designation. The outstanding wilderness values described in Chapter 3 would exceed other resource potentials of the area. Designation would add both quality and diversity to the National Wilderness Preservation System (NWPS). The WSA is manageable as wilderness as there are no valid existing rights or landownership conflicts which could impact long-term wilderness management. Closure of the Turkey Flat Road would enhance wilderness manageability.

Burnt Timber Canyon WSU—This proposed action recommends that 3,430 acres be designated as part of the NWPS while 525 acres be recommended nonsuitable. As there are no valid existing rights or land ownership conflicts, the area recommended as suitable could be managed as wilderness. Manageability would be enhanced if the contiguous U.S. Forest Service Lost Water Canyon Study Area is designated as wilderness.

Big Horn Tack-On WSU—The 2,550 acre southern segment would be recommended as suitable and would be manageable as wilderness in conjunction with the contiguous National Park Service study area. This portion of the WSA is manageable as wilderness since no valid existing rights or land ownership conflicts exist which could affect long-term wilderness management.

The 2,000 acre northern segment would be recommended nonsuitable. This area has only a tenuous connection with the U.S. Park Service study area and does not contain the high quality wilderness values present in the south segment. Recommending this area nonsuitable for wilderness designation would not have a detrimental effect on the long-term wilderness management of the National Park Service wilderness study area to the south because of the tenuous boundary connection. It is not contiguous to the BLM study areas and a nondesignation recommendation would not affect the Bureau areas proposed for wilderness designation.

Conclusion

This proposed action would allow multiple resource uses in the Twin Coulee WSA including timber harvest and mineral production. The economic value of the timber resource exceeds the marginal wilderness qualities of the area.

In the Pryor Mountain WSA, the outstanding wilderness values and lack of resource conflicts makes this area suitable as wilderness.

The lands recommended as suitable in the Burnt Timber Canyon WSU contain extremely high wilderness values and would add diversity to the NWPS, with limited resource uses foregone.

Big Horn Tack-On WSU—The lands recommended nonsuitable under this alternative would not significantly enhance the NWPS. The segment recommended for wilderness designation would enhance management of the adjacent National Park Service wilderness study area.

There would be no irreversible or irretrievable loss of wilderness resources in this proposed action.

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Social

Grazing Management

Impacts would be the same as those described in the High Level Management Alternative.

Coal

Impacts would be the same as those described in the Low Level Management Alternative.

Attitudes Toward the Alternative

No specific information on attitudes toward this proposed action has been collected. This proposed action proposes a compromise between the Low, High and Continuation of Management Alternatives based on environmental, social and economic impacts.

Based on the attitudes toward specific issues (Chapter 3, Social and Economic Conditions) it's assumed that those individuals and groups concerned with environmental protection would support many aspects of this proposed action. These proposals include restrictions on oil and gas leasing and the inclusion of environmental, economic and social planning steps in determining the land to be made available for coal leasing, provisions for environmental education sites based on demand for these sites and the enhancement of wildlife habitat. They may favor the wilderness designation of the three WSAs/WSUs in the Pryor Mountains. They would probably favor land exchanges where high value recreation land or wildlife habitat was acquired but would be opposed to some land sales.

Individuals or groups concerned with resource development may have reservations about the proposal for inclusion of three areas in the National Wilderness Preservation System, and the inclusion of additional planning steps in determining the land to be made available for coal leasing and increased restrictions on oil and gas leasing. Some individuals may favor the proposal to drop three areas from wilderness designation, and the actions to bring coal lands forward for possible leasing pending further study. Some individuals may favor the increase in land tenure changes. Others may feel the increased changes could ultimately cause problems with resource development.

Ranchers would react positively toward this proposed action because it increases the number of AUMs available for livestock. Ranchers who are concerned about coal development would favor the inclusion of environmental, economic and social planning steps in determining the land to be made available for coal leasing. Individuals or organizations who wish to purchase public lands would favor land tenure changes proposed in this proposed action. Those ranchers who are not currently in a position to purchase land may be concerned about sales.

Recreationists and others would react positively to this proposed action because it includes increased hunting and fishing opportunities, increased access and the possible acquisition of high value recreation sites through land exchanges and wilderness designation of two areas.

Individuals who favor the development of the Winddrinker Site as a wild horse interpretive overlook would be disappointed by this proposed action. Those individuals who favor no control of the wild horse population, might react negatively to this proposed action.

Conclusion

The social well-being of the families dependent upon the 43 affected ranches would improve in the long term. Moderate impacts to the social organization in Fromberg could occur due to the development of a subsurface coal mine. This proposed action would probably be viewed as an acceptable compromise by both those concerned with environmental protection and those concerned with resource development.

Economics

Grazing Management

Ranch Related Economic Impacts—Impacts would be the same as those described in the High Level Management Alternative.

Timber Management

Sales of up to 1 MMBF may occur in the resource area but the anticipated annual cut is 70 MBF. This would continue to meet local demand for BLM timber. The increase in the annual harvest (25 MBF) represents less than 1% of the total volume received by sawmills in the resource area for 1981.

This increase in annual cut would provide only enough lumber to build four 1,500 square foot, three bedroom, frame, ranch style homes. There would be little or no impact on timber related earnings and employment under this proposed action.

Coal

Economic impacts would be the same as those described in the Low Level Management Alternative.

Land Tenure Adjustment

An adjustment in the public landownership pattern could mean a decrease of payment in lieu of taxes to counties involved. Conversely, it could also mean an increase in the tax base. The PILT funds for the State of Montana have decreased 65% from 1979 to 1982. Those counties which contain Federal acreages would be in a somewhat better position in terms of property tax revenues if some public lands pass into private ownership and PILT payments are less than property tax payments.

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Wilderness

Economic conditions would not change substantially as a result of wilderness designation for the three areas in the Pryor Mountains. There is currently no domestic livestock grazing in the areas and mineral potential is felt to be very low. There are some commercial timber values present in the Pryor Mountain WSA, but it would not be harvested because of the sensitive soil conditions and steep slopes in the area.

Conclusion

In the long term, 43 ranch operations would have increases in income due to increases in BLM AUMs. These increases range from an average of 13% on small operations to 4% on large operations.

The Proposed Action could potentially result in a minor impact to the economy of the area due to coal development. The community of Fromberg would experience some increase in economic activity while other areas would experience little or no impact. It is expected that the impact of a population influx on community services in Fromberg would be minimal. Other resource proposals would have little or no impact on employment and earnings in the resource area.

There would be no irreversible or irretrievable loss under this proposed action.

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CONTINUATION OF EXISTING MANAGEMENT ALTERNATIVE

This alternative would maintain the present management direction to resolve issues, while responding to the requirements of new regulations and changing policies. Resource development or other activities would remain similar to those at the time this plan was prepared.

Minerals

Coal

In the short term, the coal resource (40,000 tons) at existing mine locations in the Bull Mountains is expected to be depleted, unless an emergency production maintenance lease is issued.

Oil and Gas Leasing

A previous planning document (Big Horn Management Framework Plan (MFP)) allows oil and gas leasing within the Pryor Mountain Wild Horse Range, but recommends a "no surface occupancy" stipulation to any issued lease. This would prevent a lessee from enjoying his lease and dictate that he directional drill from outside the horse range.

Classifications

The three C&MU Act classifications segregate 28,586 acres of the Pryor Mountain area against locatable mineral location (see Figure 1.2). This decreases the incentive to prospect for minerals in that area, since no mining claims may be located to protect the prospector's right to his mineral discovery.

Wilderness

In the short term, mineral exploration is restricted within the four wilderness study areas (WSAs) and wilderness study units (WSUs). This restriction is only significant in the Twin Coulee WSA, where two companies have located 166 lode mining claims. Their exploration activities will not be allowed to impair wilderness suitability. This may constrain their use of mechanized equipment in the WSA. There would be no restraints from wilderness in the long term.

The three WSAs and WSUs in the Pryor Mountains have been segregated against mineral entry, as described above. A few claims predate the segregations. Since these claims also predate the Federal Land Policy and Management Act of 1976 (FLPMA), the mining claimant could impair wilderness suitability, though unnecessary or undue surface degradation would not be allowed.

Conclusion

The coal resource within the current Federal lease area in the Bull Mountains is expected to be depleted in the short term, unless the company is able to obtain an emergency production maintenance lease. This depletion would be insignificant.

Mineral location is prohibited over a large portion of the Pryor Mountains, including all of the wild horse range. This reduces the incentive to prospect for locatable minerals. Oil companies may not seek leases where no surface occupancy is stipulated.

Oil and gas exploration and mineral prospecting in the Twin Coulee WSA could be allowed and may be restricted, since these activities may impair wilderness suitability. This may increase the cost of exploration if directional drilling is required or other prohibitions are stipulated. In the short term, these actions would result in minor impacts to those individuals or companies involved and are considered insignificant.

There would be an irreversible and irretrievable loss of coal oil, gas and other non-renewable resources to the extent that these resources are developed in this alternative.

Soils/Watershed (Erosion and Runoff)

Grazing Management

This alternative would slowly improve watershed conditions due to existing and proposed grazing treatments. There are 28,383 acres of problem areas identified in Table 2.1. Since this alternative calls for no vegetative manipulation, erosion and runoff would continue to increase in these problem areas. Approximately 21,250 acres of sagebrush occurs in soil groups ONE and THREE. Water erosion susceptibility would vary from moderate to high for the sagebrush acreage and erosion by wind would remain severe. Surface water runoff potential for the sagebrush acreage would vary from medium to very rapid, and would average 1,391 acre-feet annually.

There are 6,818 acres of native and crested wheatgrass range in need of mechanical treatments in Geomorphic Soil Groups ONE, TWO, and THREE. Susceptibility to water erosion for the native range and crested wheatgrass would vary from slight to high, and wind erosion would vary from moderate to severe. Runoff potential for the native range and crested wheat range would remain medium, and would average 495 acre-feet annually.

Wild Horse Management

The soils in the Pryor Mountain Horse Range are categorized into soil group FOUR. Erosion susceptibilities would range from slight to high for water and moderate to severe for wind. Runoff potentials would vary from slow to medium, and would average 7,057 acre-feet annually.

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Timber Management

Timber harvesting would occur on loamy soils in groups FOUR and ONE. During and immediately following harvesting, water erosion susceptibilities would vary from moderate to high. Runoff potentials would be medium. Twenty acres would be harvested in this alternative each year, and annual runoff would increase by 0.4 acre-feet during and immediately following timber harvesting. Potential hazards such as increased runoff and erosion are minimal due to the small land areas being harvested.

Soils/Watershed (Water Quality and Streambank Protection)

Grazing Management

Water quality problems such as high suspended and total dissolved solids would decline. Forty-one miles of woody floodplain type, including some streambanks, would be monitored and maintained or improved by proper grazing systems.

Wildlife

The construction of 20 waterfowl nesting islands can cause short-term negative impacts to reservoir water quality. Suspended solids and turbidity would increase due to runoff from exposed soils on islands and damaged shoreline areas.

Conclusion

Grazing management under this alternative would improve watershed conditions significantly with the exception of the 28,585 acres in need of vegetative manipulation. Within these areas, erosion susceptibility and runoff potential would remain moderate to severe and medium to very rapid, respectively. Wild horse management would benefit watershed conditions significantly since water erosion susceptibility would vary from slight to high, and runoff potential would vary from slow to medium. Due to the small area proposed for timber harvesting, the impacts to watershed would be minor. Average annual runoff could increase by 0.4 acre-feet in the cutting areas in the short term.

Water quality and streambanks would improve under this alternative. Short-term impacts to reservoir water quality would be negative due to waterfowl nesting island construction. These would be insignificant in the long term.

The loss of soil in this alternative due to erosion would be irretrievable but not irreversible. There would be no irretrievable or irreversible loss of water resources.

Vegetation

Actions under this alternative would be directed primarily toward the 22 "I" category allotments.

Grazing Management

Actions proposed under this alternative would not significantly impact vegetation on any of the "M" and "C" allotments. On 18 of the 24 implemented allotment management plans (AMPs), grazing systems would be maintained and areas that are in good range condition would remain as such. Sixteen of these AMPs are in the "M" category and two are in the "C" category. Trend studies and observations on current AMPs indicate an upward trend on 7, and static trend on 17. On the remaining 353 allotments, some changes could occur in "M" and "C" allotments in this alternative but cannot be quantified for the following reasons: (1) "M" category allotments would be monitored to ensure existing conditions did not decline; and (2) current condition data is not available for most of the "C" allotments (see Appendix 1.8 for a summary of current range conditions by category).

Impacts to vegetation from grazing management are best measured and quantified through change in vegetative composition. Ecological range condition is determined by comparing the present composition of plants within the community, with that found in a climax community. This affects the amount and quality of forage produced. Following is a summary of changes that would potentially occur in this alternative based on the Ecological Site Analysis procedure.

Acres maintained in excellent condition: 3,553
Acres maintained in good condition: 29,060
Acres maintained in fair condition: 14,725
Acres maintained in poor condition: 1,495
Acres maintained in crested wheat: 5,118
Acres maintained as rock outcrops: 3,839
Acres improved from good to excellent: 2,995
Acres improved from fair to good: 21,436
Acres improved from poor to fair: 5,458
Total Acres: 87,679

The primary reason there would be no improvement in the 16,220 acres of fair and poor condition range is that approximately 14,120 acres are covered with dense sagebrush that inhibits the response to grazing management. The remaining 2,100 acres are soils that respond slowly or extremely slowly to grazing management.

Only those improvements required to implement the prescribed grazing treatments on the "I" allotments would be installed. The construction of four reservoirs would result in the loss of approximately 10 acres of vegetation. Overuse and trampling would also occur around these reservoirs. This would result in an insignificant loss of vegetation as compared to the improved range condition. Twenty-one miles of pipeline construction would cause a minor short-term disturbance. The disturbed area would be confined to approximately 2 feet on each side of the pipeline trench and natural revegetation would occur within 2 to 5 years, based on BLM experience with water pipeline construction and rehabilitation. The 19 proposed water catchments would result in approximately 19 acres taken out of production, reducing available forage by an insignificant amount.

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The 9 wells and 13 miles of fence would not significantly impact vegetation.

Structural improvements, though not having a direct significant impact on vegetation, would have an indirect positive impact on vegetation when placed in the proper locations. Vegetation can be adversely affected where improperly located range improvements cause livestock concentrations, trailing and overuse.

The 1981 Ecological Site inventory on the Pryor Mountain Wild Horse Range indicated that 2,775 acres are in good range condition, 12,498 acres in fair, 7,900 in poor and the remaining 15,040 are unsuitable for wild horse grazing. It is anticipated that controlling horse populations at the initial stocking level (approximately 121) and improving grazing distribution by controlling their access to water sources would allow a slow upward trend in range conditions. The 1971-1972 Ocular Reconnaissance Range Survey indicated that the 6,083 acres of the PMWHR in Wyoming were in fair and poor range condition. These conditions are anticipated to remain the same because of soil conditions.

The current ecological conditions for that portion of the PMWHR in Montana would be maintained with a slow upward trend. Since yearlong use would continue without a planned sequence of rest or deferment, and current conditions and site potential are low over most of the range, no significant change is expected to occur in the range condition ratings in the long term.

Wildlife

Constructing 12 water catchments would result in a total disturbance of 3 acres of vegetation. Fencing 7 reservoirs and 10 acres of riparian areas would improve vegetative condition to good or excellent on a total of 30 acres. The construction of 20 waterfowl nesting islands would have no effect on vegetation. In order to be effective, they must be located in an area that is normally flooded by the reservoir.

Timber Management

Harvesting 45 thousand board feet (MBF) of timber per year would result in minor losses of native vegetation due to skidding and potential off-road vehicle use. However, this practice would allow for an increase of grasses and forbs and some natural reproduction of tree species in the long term.

Conclusion

Grazing management would be the only method used to improve unsatisfactory range condition under this alternative. A summary of the expected vegetative response is listed in the preceding Grazing Management section.

Wild horse management would maintain the current ecological condition with a slow upward trend.

Wildlife and timber management proposals would have an insignificant effect on vegetation.

There would be no irreversible or irretrievable loss of vegetation resources in this alternative.

Livestock

Grazing Management

The numbers of livestock or season of use would not be altered on any "M" or "C" allotments, thus causing no impacts to the livestock in these allotments. Rotational grazing treatments would increase stress on livestock slightly on the 16 new "I" allotments proposed for Allotment Management Plans. However, an increase in forage available, resulting from the grazing systems, would offset this stress.

Additional fencing and the construction of watering facilities would improve livestock distribution. This would reduce livestock stress by eliminating the need to trail long distances to and from water sources. Improved livestock distribution would also increase forage which, in the long term would increase AUMs available to livestock.

The presence of old growth vegetation can help reduce scours and grass tetany which are both aggravated by an abundance of fresh green grass.

This alternative would result in an increase of 2,200 AUMs (short term) and 3,120 AUMs (long term) which would be potentially available to livestock (see Appendix 4.2, Methodology for Grazing Management Response).

Oil and Gas

Exploration, development and production of oil and gas would have minor impacts on livestock through harassment.

Conclusion

This alternative would result in a moderate significant increase of 2,200 AUMs (short term) and 3,120 AUMs (long term) which would be potentially available to livestock.

There would be no irretrievable or irreversible loss of livestock resources in this alternative.

Wild Horses

Wild Horse Management

Controlling the availability of water and stimulating better grazing distribution would have a minor impact on the wild and free roaming behavior of the horses.

The current population level of 121 head would be maintained in the short term. The population level is the total number of horses on the range at the beginning of the winter grazing season. Approximately 80% of these horses will be 2 years old or older.

The current sex ratio and age class structure would maintain a healthy, viable breeding population. Improved range condition and a stabilized forage supply would also contribute to a healthy population. If populations were allowed to increase, based on monitoring of forage supply and trend, the level of utilization would still be moderate and a healthy herd would be maintained.

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Annual population reductions by live trapping and excessing through the Adopt-A-Horse Program would cause minor short-term disruption of normal wild horse habits and behavior. The horses excessed would be the least desirable from the standpoint of conformation, color and other genetic traits. The result would be a higher quality breeding herd.

Timber Management

In the short term, any timber harvest activity occurring as a result of concern for safety or another resource, would cause the horses to leave the higher timbered elevations. This would impact the lower elevation range because of the heavier grazing pressure and increase the potential for wind and water erosion.

In the long term, selective cutting in heavily timbered areas of the horse range would benefit wild horses and wild horse management. Thinning existing stands would provide an opportunity for growing additional forage for the horses. More open stands reduce the ability of the horses to hide and escape during capture efforts and data collection processes.

Conclusion

Continuation of the present management of the Pryor Mountain Wild Horse Range would have minor insignificant impacts to the wild horses. Timber harvesting would increase the grazing pressure at lower elevations, but in the long term, would increase the overall forage available to the wild horses.

There would be no irreversible or irretrievable loss of wild horse resources in this alternative.

Wildlife

Grazing Management

Proposals associated with the development and implementation of 22 new or revised allotment management plans over 87,679 acres for "I" category allotments would improve wildlife habitat on 21,436 acres over the long term. All new and revised allotment management plans would be developed jointly by the range and wildlife staffs to ensure objectives for both programs are considered and incorporated in a final cooperative management plan.

Constructing 4 reservoirs, 9 wells and 19 water catchment projects would help disperse livestock, improve the range condition and provide additional spring and summer forage for deer and antelope and nesting cover for upland birds, nongame birds and waterfowl. These water sources would also serve as additional watering locations benefiting nongame and upland birds, particularly chukar partridge.

The development and implementation of AMPs over 87,679 acres in 22 "I" allotments would promote better vegetative cover, particularly in the 41 miles of woody floodplain community, reducing sedimentation to ephemeral and perennial streams. Thirteen miles of fence, if some were placed around watering sources to prevent livestock concentrations and trampling, would benefit those local water bodies and reduce sedimentation, nutrient enrichment and turbidity. The construction of four reservoirs would help distribute livestock use within a watershed, allowing areas of heavy use to slowly recover. Areas immediately around the new reservoirs may be extensively used causing sedimentation problems at those sites. The cumulative impacts would be beneficial over the long term.

Wild Horse Management

Keeping horse populations in balance with available forage would allow improved range conditions for bighorn sheep, mule deer, upland birds and nongame species (see Appendix 4.3).

Water availability is also a major influence in wildlife distribution on the horse range. Five additional watering facilities may expand the bighorn sheep and deer habitat use areas.

Seven miles of fence could cause minor adverse impacts associated with movement within the horse range of the larger ungulates, especially during winter months when there is heavy snow.

Five new watering sources would disperse wild horses to additional portions of their range. This would allow for a slow recovery of areas presently overutilized and reduce surface runoff and sedimentation. Current impacts to Crooked Creek are typically bank sloughing at horse trail crossings and are not expected to change. Maintaining horse population numbers in balance with available forage would have the greatest benefit to reduce aquatic habitat deterioration.

Wildlife Management

Projects such as 12 watering catchments would improve chukar partridge, sharptail grouse, sage grouse and nongame bird habitat. The range used by chukar partridge would expand by 3,800 acres.

Constructing 20 waterfowl nesting islands and fencing or partially fencing 7 reservoirs should improve nesting cover and thus waterfowl production in the long term. Annual production is estimated at 140 ducks (see Appendix 4.4, Methodology for Wildlife Management Program).

Fencing two riparian zones (10 acres) would improve cover and food for upland game and nongame wildlife.

Fencing of approximately 10 acres of riparian habitat and seven reservoirs would enhance adjacent aquatic habitat by reducing livestock trampling and sedimentation. Constructing 20 waterfowl nesting islands may add sediment to those reservoirs and increase turbidity. Riprapping the islands would minimize the erosion caused by wave action.

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Timber Management

Proposals to harvest approximately 45 thousand board feet (MBF) on 20 acres would cause a short-term disturbance to a very small segment of the ungulate population, primarily deer, and displace some small nongame species. Opening the tree canopy would promote forbs and browse and enhance deer habitat. Nongame species would also colonize this newly created habitat. If timber harvest were to occur in protected areas, it would benefit game species to the detriment of species favoring old growth or decadent timber stands.

Timber and fuel wood harvest would result in increased sediment yields. Road construction associated with harvest activities would be the greatest single source of sediment, however, proper road design and harvest practices would minimize these impacts. Timber harvest, if implemented as clearcuts, would increase water yields. However, due to the small scale of the proposal it would only affect the headwaters of small watersheds and contributions. Increased sedimentation yields downstream would be negligible. The cumulative impacts associated with timber harvest would be slight.

Coal

The current level of coal mining (one mine) has a very insignificant affect on the available wildlife resources.

Approximately 10,000 tons of coal would continue to be mined annually. This level of mining would disturb approximately 1 ½ acres annually totalling 6 acres for the life of the mine. This small usage coupled with reclamation would be of minimal impact to wildlife. The movement of equipment and transporting coal would cause more significant impacts (the loss of wildlife habitat and the relocation of some species).

Development of coal in the Bridger/Fromberg area is not expected to adversely impact wildlife, since underground mining would disturb only a small area.

Impacts on aquatic habitat, primarily from developed service roads, parking areas and other surface disturbances may have potentially significant impacts. These impacts would be limited to ephemeral streams, springs and small local bodies of water. This type of aquatic habitat is limited in the Bull Mountains and potential impacts are thought to be few in number and easily mitigated.

Impacts in the Bridger/Fromberg area are anticipated to be insignificant due to the very limited aquatic habitat.

Land Tenure Adjustment

The current level (three land disposals) would not have a significant affect on wildlife habitat. The exchange of public lands for similar, or greater value lands, would result in the acquisition of significant wildlife habitat due to its unsuitability for agricultural purposes.

Classifications

Since surface disturbance activities would cause some loss of habitat and harassment of animals, the 28,586 acres in the Pryor Mountain area segregated for mineral entry will afford some protection to a variety of wildlife.

The lack of surface disturbance would benefit the limited aquatic habitat on and adjacent to the area. This benefit is thought to be minimal.

Recreation Access

Access encourages increased human activity in an area. Some disturbance and relocation of wildlife species would occur when existing access is utilized.

Access would also encourage surface disturbance from people and increase surface runoff and sedimentation into water bodies. This could be a significant problem at popular sites, but overall, it's not anticipated to be significant.

Off-road Vehicle Use

Under this alternative ORV use would result in some increased habitat destruction and harassment of wildlife.

Conclusion

Livestock and wild horse watering facilities could expand wildlife distribution and decrease overall use on key areas. Improved range condition would provide additional spring and summer forage for antelope and deer and increase the food and nesting cover for upland game birds. Stockwater reservoirs would increase waterfowl production and provide potential fisheries. Proper stocking levels of horses would improve wildlife habitat on the Pryor Mountain Wild Horse Range.

The installation of 12 wildlife watering sources would significantly benefit game birds, particularly chukar partridge, by expanding their available range by 3,800 acres. Constructing 20 waterfowl nesting areas would significantly increase waterfowl production. The current level of timber harvest would be beneficial to wildlife (primarily deer) in the long term.

The existing level of coal production in the Bull Mountains would continue to have minimal insignificant impacts on wildlife resources.

There would be no irretrievable or irreversible loss of wildlife resources in this alternative.

Recreation

Grazing Management

Thirteen miles of new fenceline would somewhat restrict the ease of movement of hunters and other recreationists. The proper placement of cattle guards would minimize this impact.

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Wild Horse Management

Existing management would result in gradual improvements in range and wildlife habitat conditions. Recreational opportunities such as hunting may also improve gradually.

Wildlife Management

Wildlife management would result in an increase in hunting opportunities through improving wildlife habitat. The development of two fishery reservoirs would enhance warm water fishing opportunities significantly, especially if the reservoirs are located within 80 miles of Billings.

Oil and Gas Leasing

Leasing the PMWHR with "no surface occupancy" stipulated would help preserve the exceptional quality of this area for recreational purposes.

Land Tenure Adjustment

The opportunity for exchanging small, isolated public lands for private lands with greater recreational values would be lost under this alternative.

Classifications

The existing classification status for the Pryor Mountain area protects recreational values from damage caused by mining operations over most of the horse range.

Recreation Access

Members of the public have expressed a need for recreational access to many additional public land areas. The opportunity to fully enjoy these areas is presently not being realized.

Off-road Vehicle Use

The 70 acre closure in the South Hills resolves conflicts between landowners and recreationists. Leaving 1,200 acres open in the South Hills area provides an opportunity for ORV recreationists living in or near Billings. The limited designation in the Pryor Mountain and Acton areas (55,800 acres) has only a minor impact upon recreation use in those areas.

Wilderness

Recreation activities (motorized use) may not impair wilderness suitability and may therefore be restricted. This impact is insignificant on an areawide basis.

Conclusion

Proposed actions under the grazing management, wild horse and wildlife issues would result in a moderate significant improvement in range and wildlife habitat. Wildlife populations would increase, providing additional hunting opportunities. Fencing proposals would have a minimal impact on recreation as long as cattle guards or gates are properly placed. Establishing new warm water fisheries near Billings would have a significant impact on recreational opportunities in the area. Oil and gas leasing stipulations, and C&MU classifications help protect recreational values from damage.

If legal access is not provided for the seven areas currently lacking access, significant recreational opportunities would continue to be unavailable to the general public. Off-road vehicle designations generally favor recreational uses by resolving conflicts.

There would be no irretrievable or irreversible loss of recreation resources in this alternative.

Visual Resources

Grazing Management

The grazing management impacts to visual resources would be insignificant. Most of the proposed range improvement projects are located in Class III and IV landscapes. The four proposed reservoirs would create moderate visual impacts in the short term, but in the long term, the visual impacts would be positive because of increased vegetative composition and improved watershed conditions. The 19 water catchments would also result in moderate visual impacts. An insignificant negative impact would result if 21 miles of pipeline, 9 wells and 13 miles of fence were constructed. All of these developments would meet Visual Resource Management (VRM) class guidelines. Large numbers of surface disturbances are not anticipated in any given area.

Wild Horse Management

Range improvement proposals would result in minimal impacts to visual resources. The five water catchment projects would create moderate negative impacts. These projects would be distributed throughout the PMWHR. The presence of wild horses is aesthetically pleasing to visitors and is a significant positive impact.

Wildlife Management

The Continuation of Existing Management Alternative would have a minimal impact on visual resources. A moderate negative impact would be anticipated with the placement of 12 water catchments, 20 waterfowl nesting islands and 7 reservoirs. The ½ mile of fencing proposed would result in a slight negative impact. Fencing selected riparian zones and reservoirs would increase vegetation and improve scenic quality.

Timber Management

The impacts of timber management on visual resources under this alternative would be minimal on the resource area's visual resources. The activities associated with small acreages of timber harvest (45 MBF) would meet the VRM class guidelines.

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Coal

The existing levels of coal mining would result in continuing negative impacts to the visual resources. Even though the amount of surface disturbance (1½ acres annually) is small, it could be a significant impact in a very localized area and would not conform with visual resource management class guidelines in the short term. The long-term impacts would be minimized with reclamation to approximate the original contour as required by state and Federal law.

Oil and Gas Leasing

The existing levels of mineral leasing would result in minimal impacts to the visual resources. The 49,870 acres leased under special stipulations have built-in mitigative measures. Development associated with this activity would be accomplished within the guidelines for the VRM classes.

Classifications

The segregation of 28,586 acres in the Pryor Mountain area from mineral entry is beneficial, and would preserve the visual qualities of the area. Activities associated with mining could have a major negative impact on the visual landscape.

Off-road Vehicle Use

The 55,870 acres under limited or closed designations would protect visual resources.

Environmental Education

Existing levels of management would have insignificant impacts to visual resources.

Conclusion

The cumulative negative impacts to visual resources from grazing, wild horse, wildlife and timber management would be insignificant with this alternative. The proposed range developments would have a short-term negative impact. Coal development impacts could have a significant short-term impact in a very localized area, but would be mitigated by proper reclamation procedures in the long term. Oil and gas leasing would result in insignificant impacts to the visual resource.

The continuation of off-road vehicle restrictions would have a positive significant impact on the visual resources.

There would be no irretrievable or irreversible loss of visual resources in this alternative.

Cultural Resources

Grazing Management

Constructing reservoirs, water catchments, pipelines and wells would disturb 61 acres. One cultural resource site may be encountered and would be avoided.

Wild Horse Management

Water catchment construction will disturb 3 acres. There is less than 1% probability of encountering cultural resources.

Wildlife Management

Water catchment construction would disturb 6 acres. There is less than 1% probability of encountering cultural resources.

Timber Management

Cutting 20 acres of timber a year would disturb 500 acres in the long term. There is a 78% probability of encountering a site. The site would be avoided.

Coal

Six acres would be disturbed in the short term. There is less than 1% probability of encountering cultural resources.

Oil and Gas Leasing

Drilling 10 wells a year would disturb 500 acres in the long term. Two cultural sites may be encountered and both would be avoided.

Land Tenure Adjustment

The disposal of 3,570 acres may impact 20 sites. Based upon current inventory information and professional judgment, it's assumed that 5% of the sites located within the current assessed disposal area would be highly significant and/or rare, and best kept within Federal ownership. Therefore, one site would be avoided through ownership retention. The 19 remaining sites may or may not qualify for the National Register of Historic Places. Those that do would be mitigated if the budget permits (see Appendix 1.10), or transferred out of Federal ownership after consultation with the Advisory Council on Historic Preservation per 36 CFR 800. Those that do not qualify would be transferred along with the acreage. Any increase in acreage beyond what is already quantified is impossible for the BLM to assess at this time.

Off-road Vehicle Use

Except for restricted areas, the BLM is unable to quantify ORV impacts to sites on the majority of lands in the resource area open to such use. However, vandalism, and site deterioration may result from ORV traffic.

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Conclusion

Anything less than 5% probability of encountering a cultural site has not been computed.

The proposals in this alternative would disturb or impact 4,646 acres. Twenty-four sites would be encountered. Five sites would be avoided and 19 sites mitigated or transferred out of Federal ownership. Any cultural site inadvertently destroyed in this alternative would be irretrievably and irreversibly lost. The impacts to cultural resources are considered to be insignificant due to mitigating practices.

Wilderness

Grazing Management

Twin Coulee WSA—There would be no significant impacts to existing wilderness values from ongoing or proposed grazing management actions. Only 600 acres of the study area are used for livestock grazing with 69 AUMs licensed. There are no specific proposals for range improvement projects.

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU—There would be no impact on wilderness values as none of the lands in the three study units are licensed for domestic livestock grazing.

Wild Horse Management

Pryor Mountain WSA, Burnt Timber Canyon WSU and Big Horn Tack-On WSU—There would be no significant impacts to the wilderness qualities from the existing wild horse management program. One water catchment is proposed for the Pryor Mountain WSA. It is likely this catchment could be built without impact to the apparent naturalness of the area.

Timber Management

Twin Coulee WSA—Timber management in the Twin Coulee WSA would not significantly impact the wilderness qualities, as no timber sales are planned.

Pryor Mountain WSA—Six hundred acres including 5 million board feet of timber is not within the "protection area" and has the potential for timber harvest. Such harvesting would have major impacts to the wilderness qualities in the northern portion of the area.

Burnt Timber Canyon WSU, Big Horn Tack-On WSU—There would be no impacts from timber harvest as there are no identified sales sites and the timber is classified as protected.

Oil and Gas Leasing

Twin Coulee WSA—There would be no significant impacts to wilderness values from the ongoing oil and gas leasing situation. The Twin Coulee area is under lease application. The BLM considers the potential for discovery of oil and gas reserves to be low. If leasing were to occur, wilderness protection stipulations would be attached and any impacts occurring would not be impairing.

Pryor Mountain WSA, Burnt Tir ıer Canyon WSU, Big Horn Tack-On WSU—Presently, there are no oil and gas leases in the three Pryor Mountain area WSA and WSUs. The BLM considers the potential for discovery of oil and gas reserves to be low. The potential for impacts is considered small. If leasing did occur, it would be with no surface occupancy stipulated. This would further decrease the potential for impacts.

Wilderness Manageability

Twin Coulee WSA—This alternative would mean no action on wilderness designation of this WSA. There would be no wilderness protection for 6,870 acres of public land. The area would, however, likely retain its wilderness character, at least in the short term.

As described in Chapter 3, Wilderness Quality, this area does not contain high wilderness values or special features and would not provide outstanding quality or diversity to the National Wilderness Preservation System. In the long term, even though wilderness values could be reduced or destroyed by timber harvest or mineral development, those developments would not create the loss of an outstanding wilderness resource.

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU—This alternative would mean no action on wilderness designation of these three study units. There would be no wilderness preservation for 16,927 acres in the Pryor Mountain Unit, 3,955 acres in Burnt Timber Canyon Unit and 4,550 acres in the Big Horn Tack-On Unit.

Wilderness values are particularly outstanding in the Pryor Mountain and Burnt Timber Canyon areas where size, screening and lack of both on and offsite impacts create outstanding solitude and primitive recreation opportunities. Both of these areas would offer outstanding quality and diversity to the NWPS. The opportunity to include these areas in the NWPS would be foregone with this alternative. However, it's unlikely that management of these areas would change substantially since present management of the wild horse range is in keeping with preservation of wilderness values.

Conclusion

This alternative would have no short-term significant impacts on wilderness values in the Twin Coulee WSA. There are 166 mining claims in Twin Coulee located for metalliferous minerals and there is a potential oil shale resource, but neither are presently economically feasible to develop. There is a potential for future impacts on wilderness values if the prices of certain metals or oil rise. Because of low wilderness quality, only a limited opportunity to enhance the quality and diversity of the NWPS would be foregone.

The Burnt Timber Canyon and Big Horn Tack-On Units would retain their natural character in both the short and long term with this alternative. There are no proposals under any of the multiple resource uses of these lands which would significantly damage existing wilderness values. There is the potential for some significant impacts to the northern part of the Pryor Mountain

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WSA if 5 million board feet of commercial timber on 600 acres were harvested. Because of the quality of the wilderness resource, particularly in the Pryor Mountain WSA and Burnt Timber Canyon Unit, the opportunity to add to the quality and diversity of the NWPS would be foregone.

This alternative could result in the potential loss of some wilderness values in the Twin Coulee and Pryor Mountain WSAs during the long term if timber harvest were to occur. These losses are neither irreversible or irretrievable.

Social

Grazing Management

The social well-being of the families dependent upon the 28 affected ranches would improve in the long term. Ten of these operations fall into the small herd size category where the positive effects would be proportionately greatest. The attitudes of affected ranchers would be favorable because of the long-term increases in AUMS.

Attitudes Toward the Alternative

No specific information on the attitudes toward this alternative has been collected. Individuals who feel the BLM should maintain existing management levels would approve of the plan.

Based on the attitudes toward specific issues (Chapter 3, Social and Economic Conditions) it appears those individuals and groups concerned with environmental protection would favor the elimination of the acreage available for coal leasing, the restrictions on timber harvest and oil and gas leasing, and the continued use of the Ah-Nei Site for environmental education. They may oppose the plan to propose no land for wilderness designation.

Individuals and groups concerned with resource development would oppose the elimination of the coal available for leasing. They may favor not designating lands as wilderness.

Ranchers would react positively toward this alternative because it increases the AUMS available for livestock with a minimal increase in governmental presence and control. Ranchers would favor the existing level of land sales and exchanges done for their benefit. Those ranchers concerned about the impact of coal development on their lifestyle would favor this alternative.

Recreationists may perceive that the BLM is failing to respond to their demand for increased access in this alternative. However, they would favor the minimal increases in hunting and fishing opportunities.

Individuals who favor the development of the Windrinker Site interpretive site would not favor this alternative. Those who favor no control of the wild horse population, might also react negatively to this alternative.

Conclusion

The social well-being of the families dependent upon the 28 affected ranches would be improved in the long term. Attitudes toward the alternative would be mixed; those who favor maintaining existing management levels would approve of the plan.

Economics

Grazing Management

Ranch Related Economic Impacts—See Appendix 4.8 for an explanation of the methodology used in this section.

The overall short-term impact on ranch income in this alternative would be minimal. This is because the only identifiable change in AUMs would be the temporary disruption of grazing, as mechanical treatments are applied or grazing systems implemented.

In the long term, 28 ranches would show increases in income due to a 19% increase in BLM AUMs. These increases are shown in Table 4.2 by representative size category. The average change in net annual income for the representative livestock categories ranges from an increase of $187 on small operations (7% of their current livestock income) to $1,203 on very large operations (2% of their current livestock income).

TABLE 4.2: ESTIMATED LONG-TERM IMPACTS OF THE CONTINUATION OF EXISTING MANAGEMENT ALTERNATIVE ON NET ANNUAL RANCH INCOME ON AFFECTED RANCHES

Ranch Size Category	Size by # of Brood Cows	# of Ranches	Average Increase BLM AUMs Per Ranch	Average Annual Net Income Per Ranch	Change in Income $	Change in Income %
Small	1-100	10	36	$2,846	+187	+6.6
Medium	101-250	6	93	$10,662	+605	+5.7
Large	251-499	4	125	$24,501	+800	+3.3
Very Large	500-up	8	188	$65,341	+1,203	+1.8

Source: BLM, 1982

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Greater income, because of increases in BLM forage, would improve the economic well-being of operators in a number of ways. Those who might have diverted funds to allow for depreciation, deferred maintenance or deferred principal and interest payments would be in a position to use more funds for these purposes. Increased income might also be used to raise the living standards of some operators.

There would be no short-term change in permit value. In the long term, grazing permit values would increase an average of $3,600 for the small operations, $9,300 for the medium size operations, $12,500 for the large operations and $18,800 for the very large operations. This represents a 19% increase in grazing permit value for each representative category. These increases would have a beneficial effect on ranchers' borrowing ability and the sale value of affected ranches.

Timber Management

The existing annual cut of 45 MBF would continue to meet local demand for BLM timber and would have no impact on earnings and employment related to wood products. The current annual cut is less than 1% of the total volume received by sawmills in the resource area for 1981.

Coal

The two existing coal mines in the Bull Mountains each produce approximately 10,000 tons of coal per year. Both mines serve southern Montana for domestic purposes and light industry. This alternative would continue the present production level to satisfy local demand. No impact to employment or earnings would occur, except the continuance of present employment.

Land Tenure Adjustment

To continue adjusting the land pattern at the same level would have little or no impact on the economy of the area.

Wilderness

With this alternative the study areas and units would not be recommended for wilderness designation and the present resource use and management direction would continue. There would be no impact to ranch related income and no additional timber or mineral values foregone with this alternative.

Conclusion

Continuation of the Existing Management Alternative would have little or no impact to the economy of the area in the short term. In the long term, 28 ranch operations would have increases in income due to increases in BLM AUMs. These income increases range from an average of 7% for small operations to 2% for large operations.

There would be no irreversible or irretrievable loss under this alternative.

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LOW LEVEL MANAGEMENT ALTERNATIVE

The Low Level Management Alternative refers to a lower level of BLM management and involvement than in the Continuation of Existing or High Level Management Alternatives. Depending on the specific issue, this alternative would mean fewer restrictions on development or a lesser degree of protection and enhancement of resource values.

Minerals

Most of the activities proposed in this alternative have no impact on the management, exploration or development of mineral resources.

Coal

All 9,360 acres of Federal coal currently found acceptable for further consideration for leasing pending further study would be made available under this alternative for activity planning. Offering coal tracts in the Bull Mountain Field for leasing for surface mining could result in increased industry interest and activity. In the long term, 4,350,000 tons would potentially be depleted. Leasing coal by application in the Joliet-Fromberg Field for underground mining would allow development of the coal resource not feasible to develop by surface mining methods. Local needs for coal would also be met. In the short term, 630,000 tons of coal would potentially be depleted through underground mining. In the long term, 2,550,000 tons would potentially be depleted.

Oil and Gas Leasing

Industry would have a greater incentive to lease the PMWHR, since exploration activity would be permitted. Some leases would be issued more quickly, since all leases would be issued directly from the Montana State BLM Office with standard stipulations.

Classifications

Revoking the C&MU Act classifications in the Pryor Mountains would significantly increase the opportunity (and the incentive) to explore for locatable minerals. The surface management regulations (43 CFR 3809) would be used to develop mitigation of mineral exploration and development activities.

Wilderness

Mining claims located in the Burnt Timber WSU and Pryor Mountain WSA predate the passage of the Federal Land Policy and Management Act (FLPMA), and therefore may degrade wilderness quality (though activity must still be performed in a manner so as to prevent unnecessary or undue surface degradation). Dropping the wilderness study areas and units from wilderness consideration would permit mineral exploration to continue beyond a possible designation date.

Mining claims within the Twin Coulee WSA were located after the passage of FLPMA, and therefore may not impair wilderness suitability. Dropping this WSA from wilderness consideration would permit less restrictive mineral exploration and allow exploration to continue beyond the date of designation.

There are no oil and gas leases in any of the four study areas and units which predate FLPMA. Exploration may be restricted. Dropping these areas from consideration would permit less restrictive exploration to occur.

Conclusion

Recommending to the Regional Coal Team that all areas within the resource area suitable for mining be leased may result in increased industry interest and development of the coal resource.

This alternative would significantly increase the area open to mineral exploration, and would allow less restrictive exploration and development techniques. Operations would be regulated by the surface management regulations (43 CFR 3809).

There would be an irreversible and irretrievable loss of coal, oil, gas and other non-renewable resources to the extent that these resources are developed in this alternative, however, the process could be halted at any time.

Soils/Watershed (Erosion and Runoff)

Grazing Management

Under this alternative there would be a slow improvement in vegetative cover due to the reduced numbers of livestock. The potential for erosion and runoff would therefore be reduced.

Wild Horse Management

Should wild horse numbers increase beyond the carrying capacity of the Pryor Mountain Wild Horse Range, significant long-term increases in soil erosion would result. Erosion susceptibilities would be high for water and severe for wind. Runoff potentials on this poor condition range would be medium. Average annual runoff would increase from 7,057 acre-feet in the short term to 7,314 acre-feet in the long term.

Timber Management

During and immediately following timber harvesting, erosion and runoff hazards would be the same as in the Continuation of Existing Management Alternative. Average annual runoff would increase by 0.8 acre-feet since a larger area to be harvested is proposed. This amounts to 40 acres being harvested each year. Potential hazards such as increased runoff and erosion are minimal due to the small land areas being harvested. However, these impacts could increase substantially if larger sales occur in the Twin Coulee area. If 1 million board feet (MMBF) were harvested on 440 acres, average annual runoff would increase to 8.8 acre-feet contributing to downstream sedimentation.

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Coal

Impacts would be as described under general impacts but would potentially be more severe under this alternative. Stream sedimentation caused by storm discharges greater than sedimentation pond design capacities would be more likely to occur with some short-term significant consequences. Increased surface flows would be reduced during mining and areas with lower infiltration capacities would be potentially greater after mining. Significant impacts from cumulative effects would be more likely to occur.

Oil and Gas Leasing

Impacts are the same as those described in the General Impact section.

Classifications

Impacts would be the same as described in the General Impact section

Off-road Vehicle (ORV) Use

Impacts would be the same as those described in the General Impact section.

Soils/Watershed (Water Quality and Streambank Protection)

Grazing Management

Reduction in livestock numbers alone would not alleviate watershed problems in I category allotments. Streambanks would continue to deteriorate, thus degrading water quality with increases in suspended and total dissolved solids, temperature and additional nutrients (i.e., nitrogen and phosphorus). The quality of watering sources on the Pryor Mountain Wild Horse Range would decrease due to trampling by horses as they concentrate around a limited number of waterholes.

Conclusion

Grazing management, under this alternative, would slowly improve watershed conditions. Wild horse management would significantly deteriorate watershed conditions. Erosion susceptibility would be high for water and severe for wind, and runoff potential would be moderate. Due to the small area proposed for timber harvesting, impacts to watershed would be minor and insignificant. Average annual runoff could be increased by 0.8 acre-feet in the cutting areas. The average annual runoff could increase to 8.8 acre-feet if 1,000 MBF were harvested in the Twin Coulee area.

Water quality and streambanks would significantly deteriorate. There would be no monitoring of woody floodplain types. Therefore, adjustments in grazing treatments could not be done to mitigate damage.

The loss of soil in this alternative due to erosion would be irretrievable but not irreversible. There would be no irretrievable or irreversible loss of water resources.

Vegetation

Grazing Management

Actions proposed under this alternative would not impact any of the M and C allotments that are not already under implemented AMPs. These systems would be maintained and vegetative condition would continue to improve where the trend is upward. Actions proposed would apply only to the I category allotments.

The 2,621 AUM reduction proposed on 22 I allotments would stabilize range conditions but vegetative improvement would be slow. Areas currently in poor and fair range condition often occur in drainage bottoms and adjacent to other water sources. Without additional range facilities to improve livestock distribution, these areas would continue to receive concentrated use.

Range in poor and fair condition produces a greater proportion of non-forage species than range in good and excellent condition. Reduced stocking rates would reduce areas of concentration and improve range condition on fringe areas. Changes in vegetative composition on concentration areas would be slow, resulting in a small increase in available livestock AUMs.

The following is a summary of potential changes that may occur to vegetative composition as a result of actions proposed under this alternative.

I Allotments

Acres maintained in excellent condition: 3,553
Acres maintained in good condition: 32,055
Acres maintained in fair condition: 33,072
Acres maintained in poor condition: 6,953
Acres improved from fair to good condition: 3,089
Acres unsuitable (rock outcrop): 3,839
Crested wheatgrass: 5,118

The areas currently in good and excellent range condition would be maintained in this condition. The areas currently in less than good range condition would be maintained or improve slightly through the long term, assuming these sites had the capacity to respond to grazing management. There would be no improvement in vegetative composition and range condition on 18,000 acres containing dense stands of sagebrush or where soil capabilities limit response to grazing management.

Wild Horse Management

Under this alternative, range conditions would decline drastically in the short term (8 years) due to increasing wild horse populations and overutilization of the available forage. In the long term these conditions would continue to decline and would result in the majority of the 44,296 acres of the Pryor Mountain Wild Horse Range in poor range condition.

Timber Management

An average of 90 MBF, which includes 40 acres of the Twin Coulee Wilderness Study Area, would be harvested annually under this alternative. However, some sales may approach 1 MMBF and impacts to vegetation could be significant in the short term because of skid-

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ding and road construction. In the long term, impacts would be mitigated through reforestation practices. Impacts to vegetation would be mitigated through stipulations limiting logging activity to slopes less than 30% and the reseeding of grasses and forbs on skid trails and roads. Refer to the Programmatic Environmental Assessment Review (EAR) #MT-060-06-8-18.

Coal

Potential coal mining would disturb approximately 21 acres per year with a loss of three AUMs annually. If all 9,360 acres were mined, there would be a short-term loss of 1,400 AUMs. State and Federal laws require reclamation of mined lands, therefore this loss would not be permanent. Production would be lost for the time the area is disturbed, usually 2-4 years. Assuming 15 years for bond release, 270 acres would be affected at any one time with a potential loss of 40 AUMs. Current research shows that post-mining production is similar to premining in the short term (Sindelar, 1981). If the entire 9,360 acres suitable for further consideration were mined, 1,400 AUMs would potentially be lost over a more than 400 year life span. The most serious long-term effect on vegetation would be the loss of the natural vegetation mosaic and/or species diversity (Sindelar, Dr. Brian, 1981: "Rate of Plant Succession on Mined Land in Montana", Society for Range Management Annual Meeting, Tulsa, Oklahoma, February, 1981).

Oil and Gas Leasing

Oil and gas development and production would result in the disturbance of approximately 30 acres annually. Impacts to vegetation would be mitigated through standard stipulations placed on Applications for Permit to Drill (APDs).

Conclusion

Reduction in livestock numbers is the only method considered to improve unsatisfactory range conditions. This action would result in the insignificant impacts listed in the Grazing Management section.

Range conditions on the Pryor Mountain Wild Horse Range would decline under this alternative resulting in poor condition on the majority of the range in the long term. This decline would be highly significant.

Timber management, coal leasing, and oil and gas development and production would have an insignificant impact on vegetation.

There would be no irreversible or irretrievable loss of vegetation resources in this alternative.

Livestock

Grazing Management

This alternative would result in an insignificant impact on the M and C allotments since all reductions would be directed to the I allotments. This action would be beneficial to livestock, primarily due to the reduced competition for available forage. Studies have indicated that livestock returns per acre are higher under proper use grazing levels than under heavy use. Higher production per cow unit would offset fewer cows grazing at proper use levels (Huston and Woodward, 1966).

This alternative would initially impose a 2,621 AUM reduction. However, 1,121 of these AUMs would be recovered in the short term and 2,221 AUMs would be recovered in the long term as a result of increased vegetation production.

Conclusion

This alternative would initially impose a 2,621 AUM reduction. However, 1,121 of these AUMs would be recovered in the short term and 2,221 AUMs would be recovered in the long term as a result of increased vegetation production. This would be insignificant in the long term.

There would be an irretrievable reduction in permitted AUMs in this alternative but this would not be irreversible.

Wild Horses

Wild Horse Management

Wild horse populations would increase in each of the herd areas. At the current reproduction rate, the population could double in 4 years.

During the fifth year, the population would begin to stabilize. A noticeable change would be evident in the physical condition and appearance of the horses due to diet deficiencies.

During years 5 through 10, forage production would severely decline causing severe diet deficiencies. In the long term, the diet deficiencies would cause the reproduction rate to drop below 10%. The wild horses would become emaciated, susceptible to disease and death losses would increase. A severe winter, epidemic disease or parasites could result in a drastic reduction of the herds.

Without selective culling of the wild horses, closer inbreeding would result. This would increase the probability of generating defective traits and the production of inferior horses.

The undesignated lands within the Mystic, Lost Water Canyon, and Sorenson areas, and all state lands would not be available for wild horse grazing under this alternative. Uncontrolled wild horse populations are not compatible with the management objectives for these areas.

Timber Management

In the short term, timber harvest activity would cause the horses to move from the higher timbered elevations. This would cause heavier grazing pressure at the lower elevations and productivity due to wind and water erosion.

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In the long term, selective cutting within the productive forest lands and other heavily timbered areas of the horse range would benefit wild horses and wild horse management. Thinning existing stands would provide an opportunity for growing additional forage for the horses. More open stands would reduce the horses' opportunity to hide; resulting in better observation of the horses.

Oil and Gas Leasing

Exploration activities would alter normal wild horse behavior. Opening new access routes, establishment of drilling pads and the influence of additional human presence on the horse range would cause horses to seek undisturbed areas. These activities may also interfere with the capture processes if both are occurring simultaneously. This would be a short-term impact and not significant.

Mineral discovery, development and production would cause long-term significant impacts. The behavior of the wild horses would change to adapt to the developments. The intrusion of developments would degrade the open space, wild horse range atmosphere and environment.

Classifications

Revoking existing classifications may result in increased mineral exploration activity. This increased activity would have short-term effects on the behavioral habits of wild horses.

Development and production, should it come about, could have long-term adverse impacts on wild horse behavior and management. The significance would be directly related to the magnitude of development.

Conclusion

In this alternative, available forage for the wild horses would significantly decrease in both the short and long term. As wild horse populations increased and the habitat needed to sustain a viable breeding herd decreased, severe diet deficiencies would occur. This would result in a highly significant decrease in the reproduction rate. Drastic reductions in horse populations could occur from severe winter, epidemic diseases, parasites or a combination of the three. Herd health and viability would be reduced.

Timber harvesting would increase grazing pressure at lower elevations in the short term, but would increase overall forage available to the wild horses in the long term.

Oil and gas development and production would have long-term significant effects on the wild horses.

Revoking existing classifications may have significant adverse impacts on wild horses should mineral development and production occur.

There would be an irretrievable reduction of wild horses in this alternative, but this would not be irreversible.

Wildlife

Grazing Management

Proposals for reductions in livestock numbers would create minor favorable impacts to wildlife. Less livestock on the range would reduce the competition for forage between wildlife and livestock. No specific impacts to individual species can be accurately quantified, however, this alternative would result in an increase in spring and summer forage for deer and antelope and increased residual cover for upland game birds and waterfowl.

Reductions in livestock numbers would reduce livestock use along streams, channels and around reservoirs. However, these reductions probably would not result in a significant benefit to streambank vegetative communities.

Wild Horse Management

Proposals to minimize man's influences on the wild horses would have significant adverse impacts to most wildlife species. The horse population would eventually exceed the vegetative carrying capacity. Vegetative resources critical to the subsistence and cover requirements of such wildlife species as mule deer, bear, bighorn sheep, upland game birds and small mammal populations would be drastically depleted, or eliminated. This would force the migration of the more mobile species from the horse range to areas of more suitable habitat. As the population of the horses naturally declines through starvation or winter kill and the vegetative resources would begin to regenerate, some migration of wildlife species back into the area could be expected. However, due to the climatic conditions of the area, this process would take 30 or more years.

Water quality along Crooked Creek could decline due to severely damaged watersheds, possibly destroying the existing fisheries.

Wildlife Management

The potential to improve 3,800 acres of upland game habitat and some annual waterfowl production would be foregone with this alternative. The maintenance of existing projects, and the identification of Threatened and Endangered Habitat would not be accomplished.

Considering the total habitats available for wildlife, these losses would have a minimum impact on wildlife.

Timber Management

Lifting protective designations and encouraging timber harvest on approximately 14,240 acres, including the Twin Coulee WSA, could have significant impacts to the wildlife resources if conducted during a short-term period. Displacement of some species would occur, but increased forage production would provide greater habitat diversity and promote greater variety of wildlife species in the long term.

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Accelerated erosion and sedimentation, primarily from service roads to and from cutting units, could have a significant short-term impact on aquatic habitat. Slow recovery would reduce runoff and sedimentation, but channels damaged from increased flow would not recover in the long term.

Coal

Coal reserves identified in the Bull Mountain coal field underlays a total of approximately 5,700 acres of elk winter range and approximately 22,800 acres of mule deer and turkey yearlong range. However, only approximately 2,460 acres of elk winter range and 4,800 acres of mule deer and turkey yearlong range overlays the coal reserves which are being carried forward pending further study and final application of the Federal coal unsuitability criteria. Future development of these reserves could affect a long-term maximum of 6% of the elk winter range and 2% of the mule deer and turkey yearlong range assuming an anticipated disturbance of 21 acres annually beginning the 12th year of this plan. Maximum total disturbance during the life of this plan could approach approximately 365 acres. This impact would have little significance to the total available habitat. However, there would be additional habitat disturbances occurring away from the mining site associated with development of access roads, movement of equipment and transportation of the coal.

Coal mining impacts to aquatic habitat in the Bull Mountains would be mitigated in the mining and reclamation plan developed under the authority of the Surface Mining Coal Reclamation Act.

Coal leasing and development in the Bridger/Fromberg area is not anticipated to have any significant adverse impacts to either terrestrial or aquatic wildlife resources due to the small acreage of disturbance and the limited number of aquatic habitats.

Classifications

Partial revocation of the current protective classifications on 28,586 acres of the Pryor Mountain area could degrade some wildlife habitat due to the activities associated with mineral development. Due to the fragile nature of the soils and low average annual precipitation, recovery would be very slow.

Surface disturbance associated with mineral development could be a significant impact to the limited water resources in the area.

Sedimentation and increased surface runoff during intense storm events may result in serious impacts to Crooked Creek, the only perennial stream and fishery in the area, as well as ephemeral stream channels.

Off-road Vehicle Use

Impacts from ORV use are the same as those described in the Continuation of Existing Management Alternative except that an additional 13 miles of existing roads would be opened to ORV use.

Wilderness

Potential development, such as timber harvest, in these areas could create stress on some species due to human encroachment and a loss of habitat. However, some development such as timber harvest and reservoir construction could benefit some species such as deer and elk.

Opening WSAs and WSUs for development could have an adverse impact on existing water sources. However, under this alternative, management options would exist to develop new water sources where none presently exist.

Conclusion

Reductions in livestock grazing would increase spring and summer forage for deer and antelope. Residual cover for upland game birds would increase where AUMs are reduced on grazing allotments. No improvement of streamside vegetation is expected. With increased wild horse populations, wildlife species in the Pryor Mountain Wild Horse Range would be forced to migrate to areas of more suitable habitat. Those less mobile species would significantly decline due to losses in cover and food sources. Fish populations in Crooked Creek could be severely reduced. The lack of water developments and nesting islands would result in waterfowl production being held at existing levels. Upland bird habitat would not expand by 3,800 acres. Timber harvesting would significantly increase production of grasses and forbs and provide a greater diversity of wildlife habitat. The potential for long-term degradation of aquatic habitat exists. Surface coal mining in the Bull Mountains, at this alternative level, would result in insignificant impacts to the wildlife resource in the long term within the mined area. However, there would be additional impacts associated with access roads and transportation of coal outside the actual mined area. Revoking of the current C&MU classifications in the Pryor Mountain Wild Horse Range could result in destruction of wildlife habitat due to activities associated with mineral development. Thirteen miles of existing roads would be opened to ORV use but would be an insignificant impact to wildlife.

Coal leasing and development in the Bridger/Fromberg area for underground mining purposes would result in insignificant impacts to wildlife due to the small acreage of disturbance involved.

There would be no irretrievable or irreversible loss of wildlife resources in this alternative.

Recreation

Grazing Management

Reductions in livestock AUMs would result in increased vegetation and a corresponding increase in hunting opportunities.

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Wild Horse Management

As habitat conditions decline, wild horse and wildlife populations would decline. Hunting opportunities in the Pryor Mountains would decrease correspondingly. Opportunities for recreational viewing of the wild horses would also be reduced.

Recreation Access

As in the Continuation of Existing Management Alternative, the opportunity to enjoy areas without legal or physical access would not be provided to the public.

Off-road Vehicle Use

Off-road vehicle use would be permitted on 13 miles of previously closed roads. This would increase the opportunities for motorized recreation into Red Pryor and East Pryor Mountains.

Conclusion

Hunting opportunities would increase in the I allotments where AUM reductions occur. Hunting opportunities would decrease in the Pryor Mountains with a decrease in vegetation. These impacts are considered insignificant.

Access needs to several tracts of public land would not be met.

There would be no irreversible or irretrievable loss of recreation resources in this alternative.

Visual Resources

Grazing Management

The long-term increase in vegetation under this alternative would create a positive effect on the scenic quality of public lands in the resource area.

Wild Horse Management

The management of wild horses under this alternative would have a negative impact. In the short term, the increase in horse populations without controls would result in a significant negative impact due to loss of vegetation and increased erosion. The probability of drastic reductions in the horse herd could result in a high impact to the visual aesthetics of the area.

Timber Management

The effects of timber management proposals, under this alternative, have the potential to be significant in the short term especially if a large sale, up to 1 MMBF, occurs. The removal of 14,457 acres from protected area status would result in an adverse impact to the visual resource if these areas were logged. With reforestation practices, the areas would revegetate in the long term.

Coal

A maximum of 18 acres of annual surface disturbance would occur in the long term. Associated activities, such as haul roads, would also negatively affect the visual qualities. With proper reclamation practices to approximate original contour, the long-term impacts would be insignificant.

Oil and Gas Leasing

Leases issued under this alternative could result in negative impacts since mineral activities on 49,870 acres would no longer be controlled with special stipulations.

Classifications

Impacts would be the same as those described in the General Impact section.

Environmental Education

The removal of current environmental education facilities at the Shepherd Ah-Nei site would create a positive effect on visual resources.

Conclusion

The cumulative negative impacts to visual resources from the grazing and wildlife management programs would be insignificant.

Wild horse management would result in long-term significant negative impacts to the visual resources due to loss of vegetation, drastic reduction of the wild horses and erosional factors.

Timber management proposals would result in a significant short-term negative impact to visual resources.

Oil and gas leasing without the use of special stipulations would result in significant negative impacts to visual resources.

There would be irreversible and irretrievable losses to the visual resources under this alternative.

Cultural Resources

Timber Management

Cutting 40 acres of timber a year throughout the resource area would disturb 1,000 acres in the long term. One cultural resource site may be encountered, and would be avoided. In addition, if 400 acres of timber are harvested in the Twin Coulee WSA, there is a 41% probability of encountering one site. The site would be avoided.

Coal

Twelve acres would be disturbed in the short term. There is less than 1% probability of encountering cultural resources. In the long term, 357 acres would be disturbed. There is a 56% possibility of encountering a site. Impacts to the site would be mitigated through either avoidance, stabilization of resource values or data recovery.

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Oil and Gas Leasing

Drilling 10 wells a year would disturb 500 acres in the long term. Two sites may be encountered, and both would be avoided.

Off-road Vehicle Use

Designating the previously closed dead end road in Sections 18 and 19, T. 9 S., R. 28 E., as open may contribute to vandalism and looting of two sites. Opening the previously closed road in Sections 27, 28 and 34, T. 58 N., R. 95 W., may contribute to vandalism, looting, unwarranted excavation and unauthorized camping at Site 48BH460, which is eligible to the National Register of Historic Places. Opening the Cottonwood Spring, Burnt Timber Canyon, Sykes Ridge, Inferno Canyon, Timber Canyon, Bear Spring, Water Canyon and Demi-John Flat Roads may contribute to deterioration, vandalism and looting of 22 sites, 6 of which comprise a National Historic District.

Environmental Education

The BLM is unable to quantify impacts to potential sites via environmental education uses throughout the resource area. However, vandalism, looting and ORV impact may occur.

Conclusions

Anything less than 5% probability of encountering a cultural site has not been computed.

The proposals in this alternative would disturb or impact 2,257 acres. Five sites would be encountered of which four would be avoided and one mitigated. In addition, designating certain areas under this alternative as open to ORV use may contribute to vandalism, looting, unwarranted excavation and unauthorized camping impacts to 25 additional sites. Due to mitigating practices, these impacts would be insignificant. Any site inadvertently destroyed in this alternative would be irretrievably and irreversibly lost.

Wilderness

Grazing Management

Impacts in the Twin Coulee WSA, Pryor Mountain WSA, Burnt Timber Canyon WSU and Big Horn Tack-On WSU would be the same as those discussed under the Continuation of Existing Management Alternative.

Wild Horse Management

Pryor Mountain WSA, Burnt Timber Canyon WSU, and Big Horn Tack-On WSU—Scenic quality would be diminished due to range damage from an increased wild horse population. Ultimately the drastic reduction of the wild horse population from starvation and disease would adversely impact one of the special values of the three areas.

Timber Management

Twin Coulee WSA—Over 4,600 acres containing commercial timber would be available for harvest in the Twin Coulee WSA. The timber occurs on approximately 70% of the area with over 12 million board feet available. If this timber was harvested, wilderness values would be lost throughout the WSA.

Pryor Mountain WSA—There are 600 acres of productive forest land with 5 million board feet potential in this WSA. Harvesting of this timber would eliminate wilderness values in much of the northern ½ of this WSA.

Burnt Timber Canyon WSU, Big Horn Tack-On WSU—There is presently no productive timber in either of these areas. Both would be open to harvest under this alternative, but it's unlikely that any harvest would occur.

Oil and Gas Leasing

Twin Coulee WSA—Impacts would be the same as those discussed in the Continuation of Existing Management Alternative.

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU—These areas would be available for oil and gas leasing with no special stipulations. Any oil or gas exploration activities would damage the fragile soils and vegetation in the areas and would reduce wilderness values. The BLM estimates that oil and gas potential is extremely low, so the probability of impact is low.

Wilderness Managemsnt

Twin Coulee WSA—This alternative would mean the loss of wilderness protection for 6,870 acres of public land. The area would be available for timber harvest and mineral development. Both of these uses would have the potential to severely damage or eliminate wilderness values. As described in Chapter 3, Evaluation of Wilderness Quality, this area does not contain high wilderness values or special features which would add quality or diversity to the NWPS. Under this alternative, the wilderness resource would be foregone.

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU—Impacts would be the same as those described under the Continuation of Existing Management Alternative.

Conclusion

In the case of the Twin Coulee WSA, the impacts of this alternative would be the same as in the Continuation of Existing Management Alternative, with the exception that timber harvest would occur. If timber were harvested, the WSA would lose much or all of its wilderness values. Because of the low quality of the wilderness resource, there would only be a minor insignificant loss to the quality and diversity of the NWPS.

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In the case of the Pryor Mountain WSA, Burnt Timber Canyon WSU, and Big Horn Tack-On WSU, the overall impact of this alternative would be the same as the Continuation of Existing Management Alternative with the exception of oil and gas leasing. The opening of the areas to leasing with no special stipulations creates the possibility of the loss of wilderness values from exploration and development.

There would be an irreversible and irretrievable loss of some wilderness resources under this alternative if timber harvest were to occur.

Social

Grazing Management

The social well-being of the families dependent upon the 28 affected ranches would be decreased in the short and long terms. Ten of these operations fall into the small herd-size category, where the negative effects would be greatest. Attitudes of the affected ranchers toward this alternative would be unfavorable because of the losses of income and permit values.

Coal

Population increases resulting from coal development are projected to be less than 1% for Yellowstone, Musselshell and Carbon Counties as well as the communities of Billings and Roundup (see Coal under Economic Impacts for this alternative). These small increases would not significantly affect social well-being or social organization in these areas.

The E/D model results predict that fewer than five mine workers would reside in the Roundup area. This figure includes in-migrants as well as current residents who may be hired at the mine. It is presumed that very few Roundup residents would directly benefit from employment at the mine. It's possible that some Musselshell County ranchers who lease BLM grazing or private grazing or cropland underlain by Federal coal may lose the use of that land without compensation (see Coal under Economic Impacts for this alternatives).

A 10-20% population increase in Fromberg from subsurface mine development is estimated to potentially occur in the short and long terms. Some impacts to social organization may occur because of population increases. These impacts could include residents no longer knowing all their neighbors, greater diversity in resident lifestyles, changes in business transactions and government structures from casual to more formalized, and increases in the level of outside influences in the community. It is not anticipated that these impacts would be severe as population growth is moderate. Negative impacts to social well-being would be limited as major public services (water, sewer, police, fire and schools) currently, or in the near future, would have the capacity to absorb the projected increases. Some problems such as increases in noise, traffic and crime may occur. Benefits to social well-being would occur to those people who are able to acquire employment or who benefit from business expansion as a result of the increased income in the community.

Attitude information collected in 1978 (John Short & Associates) indicates support for new industry and growth in Carbon County. However, the attitudes of Carbon County and Fromberg residents toward this specific mine are not known.

Attitudes Toward the Alternative

No specific information on attitudes toward this alternative has been collected. This alternative proposes fewer restrictions on development with less emphasis on protection and enchancement of resource values. Some individuals or groups may favor this alternative because they perceive it as less government interference in their lives. Other individuals may feel the adoption of this alternative would mean the BLM would inadequately protect some of its resources in the future.

Based on the attitudes toward specific issues (Chapter 3, Social and Economic Conditions) it appears that those concerned with environmental protection would oppose proposals made in this alternative. These include the lessening of restrictions on timber harvest and oil and gas leasing pending further study; the finding of no significant multiple use resource trade-offs in determining the land to be found acceptable for further consideration for coal leasing; and the removal of environmental education facilities at the Ah-Nei Site. Some of these individuals may oppose the failure to propose any land for wilderness designation. In addition, some individuals favoring environmental protection may favor the proposal not to pursue land sales or exchanges, while others might feel the opportunity to exchange lands of high recreation or wildlife values was being lost.

Individuals and groups concerned with resource development would approve of many aspects of this plan including the reduction of restrictions on logging and oil and gas leasing and the absence of environmental, economic and social planning steps in determining the land to be made available for coal leasing. Some of these individuals may support proposals for no wilderness designation. Some individuals concerned with economic development might feel land should be sold or exchanged, while others feel it would be easier to develop if it remained under Federal administration.

Ranchers would react negatively toward this alternative because it reduces the number of AUMs available for livestock. Some ranchers see coal development as a threat to their agrarian way of life. These ranchers would react negatively toward this alternative because they might feel coal development would be accelerated if environmental, social and economic concerns were eliminated. Ranchers not in a position to purchase land at this time might favor the lack of land tenure changes while others who wish to purchase public land would oppose the inability to do so under this alternative.

Recreationists may perceive the BLM as failing to respond to their demand for increased access in this alternative. The lost opportunity to exchange for high value recreation land and the lessening of wilderness values in the WSAs would also be perceived negatively by some recreationists. Some recreationists would support the increased ORV opportunities in the Pryor Mountains.

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The physical deterioriation of the wild horse herd and impacts to the soils and vegetation of the horse range would result in a negative perception of BLM's management. Some individuals would be disappointed if the wild horse interpretive overlook was not constructed.

Conclusion

The social well-being of the families dependent upon the 28 affected ranches would be decreased in the short and long terms. Moderate impacts to the social organization in Fromberg could occur due to the development of the subsurface mine. Some individuals or groups may favor this alternative because they perceive it as less government interference in their lives while others may perceive implementation of this alternative to mean the BLM would inadequately protect some of its resources in the future.

Economics

Grazing Management

Ranch Related Economic Impacts—In this alternative, there would be short- and long-term decreases in net ranch incomes because of decreases in the number of AUMs permitted. In the ranch budget analysis, it's assumed the affected operator would reduce his herd size to make up for the AUM loss. However, not all operators would react in this way. Some individuals would lease private grazing privileges. Other operators might have to resort to heavier stocking on their private lands (see Appendix 4.1 for an explanation of the methodology used in this section).

With the implementation of this alternative, 28 ranches would have a significant decrease in income due to a loss of 20% of their AUMs. These decreases are shown in Table 4.3 by representative size category. The average decline in net annual income for the categories ranges from $551 on small operations (19% of their current income) to $3,408 on very large operations (5% of their current livestock income).

By the end of the short-term period (8 years) the available forage would increase to within 11% of the original allocations. The same 28 ranches would still be affected; decreases are shown on Table 4.4. These losses range from $305 (11% of their current income) on small operations to $1,886 (3% of their current income) on very large operations.

After 25 years, these 28 ranches would show losses of about 3% from their original allocations (see Table 4.5 for decreases on representative ranches). These decreases range from $87 (3% of the current income) on small operations to $519 (less than 1% of the current income) on the very large operations.

Since a major source of income for most of the operators is ranching, any reduction in ranch income would cause an equivalent reduction in their personal income. Even with substantial reductions in income, most small commercial operators would probably continue ranching, at least in the short term. Data gathered in the study area and from independent research indicates that ranch operators would try to maintain their lifestyle (Smith and Martin, 1972). There are various actions that small operators might take to enable them to continue operating. These actions include not allowing for depreciation, deferring maintenance or using equity capital to meet short-term operating and family living expenses. Those individuals not now employed off the ranch might seek outside part-time or full-time employment.

Initial grazing permit value losses would range from $3,800 on the small ranches to $19,700 on the very large ranches. This represents a 20% decrease in permit value for each category (see Table 4.6). After 25 years, annual losses would decrease to $600 on the small operations and $3,000 on the very large operations. This represents a 3% decrease in grazing permit value for each category. These decreases in permit value would haye a detrimental impact on ranchers' borrowing capacity and the sale value of affected ranches.

TABLE 4.3: ESTIMATED IMMEDIATE IMPACTS OF LOW LEVEL MANAGEMENT ALTERNATIVE ON NET ANNUAL RANCH INCOME ON AFFECTED RANCHES

Ranch Size Category	Size by # of Brood Cows	# of Ranches	Average Decrease BLM AUMs Per Ranch	Average Annual Net Income Per Ranch	Change in Income $	Change in Income %
Small	1-100	10	38	$2,846	-551	-19.4
Medium	101-250	6	98	$10,662	-1,637	-15.3
Large	251-499	4	132	$24,501	-1,993	-8.1
Very Large	500-up	8	197	$65,341	-3,408	-5.2

Source: BLM, 1982

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TABLE 4.4: ESTIMATEO SHORT-TERM IMPACTS OF LOW LEVEL MANAGEMENT ALTERNATIVE ON NET ANNUAL RANCH INCOME ON AFFECTEO RANCHES

Ranch Size Category	Size by # of Brood Cows	# of Ranches	Average Decrease BLM AUMs Per Ranch	Average Annual Net Income Per Ranch	Change in Income $	Change in Income %
Small	1-100	10	21	$2,846	-305	-10.7
Medium	101-250	6	54	$10,662	-902	-8.5
Large	251-499	4	72	$24,501	-1,087	-4.4
Very Large	500-up	8	109	$65,341	-1,886	-2.9

Source: BLM, 1982

TABLE 4.5: ESTIMATED LONG-TERM IMPACTS OF LOW LEVEL MANAGEMENT ALTERNATIVE ON NET ANNUAL RANCH INCOME ON AFFECTED RANCHES

Ranch Size Category	Size by # of Brood Cows	# of Ranches	Average Decrease BLM AUMs Per Ranch	Average Annual Net Income Per Ranch	Change in Income $	Change in Income %
Small	1-100	10	6	$2,846	-87	-3.1
Medium	101-250	6	15	$10,662	-251	-2.3
Large	251-499	4	20	$24,501	-302	-1.2
Very Large	500-up	8	30	$65,341	-519	-0.8

Source: BLM, 1982

TABLE 4.6: CHANGES IN PERMIT VALUE FOR LOW LEVEL ALTERNATIVE

Ranch Size Category	Ranches in Category	Immediate Decrease in Permit Value $ Per Ranch	Short-term Decrease in Permit Value $ Per Ranch	Long-term Decrease in Permit Value $ Per Ranch
Small	10	3,800	2,100	600
Medium	6	9,800	5,400	1,500
Large	4	13,200	7,200	2,000
Very Large	8	19,700	10,900	3,000

Source: BLM, 1982

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Timber Management

Sales of up to 1 MMBF may occur in the resource area but the anticipated annual cut is 90 MBF. This would continue to meet the local demand for BLM timber. The increase in the annual harvest (45 MBF) represents less than 1% of the total volume received by sawmills in the resource area for 1981.

This increase in the annual cut is equivalent to the lumber required to build seven 1,500 square foot, three bedroom, frame, ranch style homes. There would be little or no impact on timber related earnings and employment with this alternative.

Coal

A scenario for the development of two mines was analyzed under this alternative.

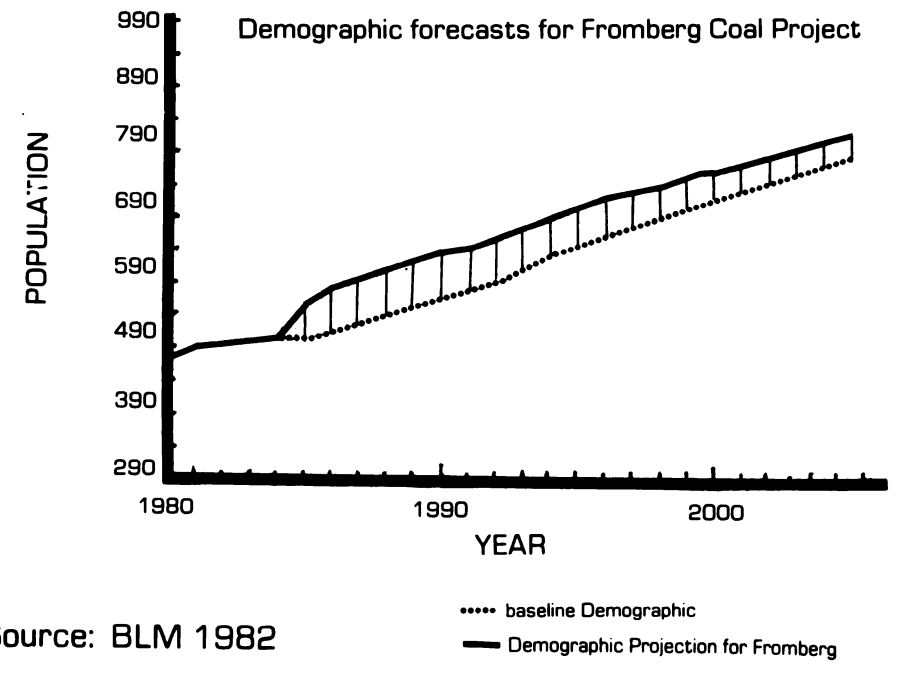
A surface mine in the Bull Mountains of Musselshell County would hypothetically employ an estimated construction labor force of 75 people for 1 1/2 years with a subsequent operating labor force of 25. The expected life of the deposit is 40 years with an annual production of 300,000 tons. This impact would remain constant under the assumed scenario, even though all 9,360 acres would be considered acceptable for further consideration for leasing pending further study.

A subsurface mine near Fromberg, in Carbon County, would employ approximately 75 people for a 2 year construction period and an operational labor force of 75 thereafter. The expected life of this deposit is 40 years with an annual production of 150,000 tons.

The E/D model was used to assess the effects if both hypothetical mines were developed. Based on projections from the E/D model, the increase in population due to coal development would occur primarily in Musselshell, Yellowstone and Carbon Counties. Development related increases in population are projected to be less than 1% for Musselshell, Yellowstone and Carbon Counties as well as the communities of Billings and Roundup. It is expected that Billings would absorb approximately 80% of the increase in population associated with coal development due to its proximity to the coal deposits and the amenties it offers. The size of Billings would enable it to absorb this increase without significant impacts.

Construction and operation of a potential subsurface mine near Fromberg would create impacts for this community as the result of population growth associated with employment opportunities. Fromberg is located approximately 2 miles east of the coal deposit. It is projected that 10% of the construction labor force and 30% of the operational labor force would reside in Fromberg. This would result in an increase in population due to coal development of approximately 12% above baseline (i.e. without development) forecasts. Comparison of the baseline forecast (dashed line) with the impact forecast (solid line) in Figure 4.1 shows the population impact for Fromberg. Fromberg would experience some long-term increases in economic activity as a result of employees and company expenditures for goods and services through the construction and operation phases. The Carbon County Clerk and School Superintendent were contacted concerning the impact of this population influx on community services. The sewage, water and school systems, and police and fire services could absorb this increase easily.

Figure 4.1. Population Impact to Fromberg.



Source: BLM 1982

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The economic impact of possible surface mining in the Bull Mountains of Musselshell County can be assessed by expressing in dollar terms the agricultural production lost. The value of all agricultural production in Musselshell County was $11,010,000 in 1978 (Census of Agriculture, 1978). Of this amount, $8,066,000 was from livestock sales and $2,944,000 from crops. It is estimated that the acreage within the coal deposit consists of winter wheat (6%), hay (3%) and the remainder (91%) primarily rangeland with some scattered timber tracts. Such a mine would disturb 3 acres per year initially, eventually reaching 18 to 21 acres per year at peak production levels. In the long term, based on a 15-year reclamation period, 315 acres would be unavailable for agricultural production each year; 19 acres of winter wheat, 9 acres of hay and 287 acres of rangeland. This would result in the annual reduction in the value of agricultural production of $4,925; $2,506 in receipts from winter wheat and hay and $2,419 in livestock receipts (see Table 4.7). This represents about 0.04% of the value of Musselshell County's 1978 agricultural production.

Mine development located near the center of a ranch could interfere with movement of livestock, fencing and pasture arrangements, livestock water supplies and distribution, and in general disrupt the overall operation. Compensation to the farm and ranch operator would vary depending upon the type of landowner lease, land ownership pattern, and percentage of land owned versus land leased. The worst situation would be an operator who leased all the land which is removed from production since no compensation would be made for lost leases. The loss in total revenue to this hypothetical operator would be approximately $4,670 per year over the long term.

Land Tenure Adjustment

Maintaining the existing public land pattern would not create additional impacts to the economy of the resource area.

Wilderness

With the Low Level Management Alternative, the four areas would not be recommended for wilderness designation and the present resource use and management direction would continue. There would be no impact to ranch related income and no additional timber or mineral values foregone with this alternative.

Conclusion

In the long term 28 ranch operations would have decreases in income due to decreases in BLM AUMs. The magnitude of the decreases lessens until, in the long term, income changes range from an average of 3% on the small operations to less than 1% on the very large operations.

This alternative would impact the economy of the area due to coal development. The community of Fromberg would experience some increase in economic activity while other areas would experience little or no impact. It is expected that the impact of a population influx on community services in Fromberg would be minimal. Other resources would have little or no impact on employment and earnings in the resource area.

There would be an irretrievable loss of ranch income in this alternative due to reductions in AUMs, but there would be no irreversible loss.

TABLE 4.7: ESTIMATED ANNUAL WINTER WHEAT, HAY AND LIVESTOCK RECEIPTS FOREGONE WITHIN THE BULL MOUNTAIN FIELD COAL TRACTS (1978 DOLLARS)

Output	Yield Per Acre[1]	Price[1]	Receipts Per Acre[2]	Acres Removed Each Year[3]	Total Receipts
Winter Wheat	25.6 bu.	3.40/bu.	87.04	18	1,567
Hay	1.75 tons	54.12/tons	94.71	9	852
Livestock	—	—	8.43	267	2,419
		Total Receipts			4,925

[1]Average for the years 1972 through 1980.
[2]Receipts per acre for livestock were estimated by dividing the average livestock receipts for the years 1972 through 1980 by the acres of rangeland and pasture.
[3]Assumes 294 acres would be removed from production each year; 18 acres of winter wheat, 9 acres of hay and 267 acres of rangeland.

Source: BLM, 1982.

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HIGH LEVEL MANAGEMENT ALTERNATIVE

The High Level Management Alternative refers to a higher level of BLM management and involvement than either the Continuation of Existing or Low Level Management Alternatives. Depending on the specific issue, high level would mean more restrictions on development which would provide a greater degree of protection and enhancement of resource values.

Minerals

Coal

The 9,360 acres of Federal coal currently found suitable for further consideration pending further study could further be reduced if additional locally important multiple use values are identified which conflict with the coal resource. The impacts would be the same as those identified in the Low Level Management Alternative, though a smaller area would be available for leasing consideration.

Oil and Gas Leasing

Designating approximately 70,000 acres of land as sensitive would result in a greater delay between the time these lands become available for leasing, and the time the lease is issued (since non-sensitive lands are immediately available for re-leasing). It is probable that special protective stipulations would be applied to these areas. Exploration operations could be more restricted. Overall, this impact is not significant.

Land Tenure Adjustment

The disposal of certain tracts of public land would have no direct impact on mineral resources or development, since mineral rights would not be disposed of or exchanged for less than equal value. The loss of surface control might constrain mineral access or development, since the BLM or a mining company would have to obtain access into the tract. However, this is not a significant impact.

Classifications

A protective withdrawal which would segregate the lands within the Pryor Mountain area from mineral entry would result in a loss of opportunity and less incentive to prospect for locatable mineral resources.

Recreation Access

Should legal access for recreational purposes be obtained into the tracts described in this alternative, access for development of mineral resources would also be secured. This would increase BLM's latitude for developing saleable minerals (such as rock, sand or gravel) since BLM generally would not acquire or condemn access for saleable resources development.

Wilderness

Mining claims within the Twin Coulee WSA were located after the passage of the Federal Land Policy and Management Act (FLPMA), and therefore may not impair wilderness suitability. The opportunity to develop a potential mineral resource would be foregone. Mining claims located in the Burnt Timber Canyon WSU and Pryor Mountain WSA predate the passage of FLPMA, and therefore may degrade wilderness quality (though activity must still be performed in a manner so as to prevent unnecessary and undue degradation). Refer to the General Impact section, Minerals, for further discussion.

Conclusion

The eastern half of the Pryor Mountains (includes three Pryor Mountain WSAs and WSUs) administered by BLM would be closed to locatable mineral exploration and development. Though mineral potential is unknown and suspected to be low, it would be a significant impact unless actual potential were evaluated, and found to be low. Oil and gas leasing could be delayed in the designated sensitive areas. Exploration activities in these areas could be restricted.

If designated a component of the National Wilderness Preservation System, the Twin Coulee WSA would also be essentially closed to exploration and development of locatable and leasable minerals eliminating the possibility to develop the mineral resource.

Obtaining legal access for recreation purposes would also allow access for mineral exploration and development of saleable minerals. The potential for mineral deposits in the identified tracts is unknown.

There would be an irreversible and irretrievable loss of coal, oil, gas and other non-renewable resources to the extent that these resources are developed in this alternative.

Soils/Watershed (Erosion and Runoff)

Grazing Management

In the long term, watershed conditions would improve through better distribution of livestock and water sources, and manipulating vegetation in some areas of poor to fair range condition (28,383 acres). The following specifically addresses short- and long-term impacts caused by sagebrush burning. In the short term: erosion susceptibilities would be moderate to high for water and severe for wind; runoff potential would be rapid to very rapid; and average annual runoff would equal 1,607 acre-feet. In the long term: erosion susceptibilities would be moderate for water and wind; runoff potential would be medium due to increased rainfall intercept; and average annual runoff would equal 1,176 acre-feet.

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The following specifically addresses short- and long-term impacts caused by mechanical treatments to native and crested wheat rangeland. In the short term: erosion susceptibilities would be moderate to high for water and severe for wind; runoff potential would be moderate; and average annual runoff would equal 565 acre-feet. In the long term: erosion susceptibilities would be moderate for water and wind due to increases in cover and roughened surface; runoff potential would be reduced to slow; and average annual runoff would equal 424 acre-feet.

Wild Horse Management

Erosion and runoff on and from the Pryor Mountain Wild Horse Range would decrease due to the improving range conditions. Runoff in the short term would average 7,057 acre-feet per year, and in the long term, would decrease to 6,742 acre-feet per year.

Timber Management

Erosion and runoff impacts from timber harvesting would be the same as those described in the Continuation of Existing Management Alternative, Soils/Watershed.

Coal, Oil and Gas Leasing, Classifications and Off-road Vehicle Use

The impacts are the same as those described in the General Impact section.

Environmental Education

Development of an environmental education site near Acton would have both positive and negative impacts. While closing the 60 acre site to ORV use would enhance the watershed condition and decrease soil erosion and runoff, there would be the potential for development of trails and parking areas. This could cause local erosion problems within the site.

Wild Horse Interpretation

Construction of a wild horse interpretive site could have slight negative impacts on watershed. The area is fragile, consisting of thin soils and sparse vegetation. There would be potential for increased soil erosion during site construction, and soil compaction if the site incurred heavy use.

Soils/Watershed (Water Quality and Streambank Protection)

Grazing Management

Water quality and streambank erosion would improve as described under the Continuation of Existing Management Alternative, Soils/Watershed. The exception to this statement is the total impact caused by vegetative manipulations. Vegetative manipulation on 28,383 acres would increase water quality pollution in the short term. In the long term, decreased erosion and runoff would reduce the suspended and total dissolved solids concentrations in streams near treatment areas. Also, leafy spurge spraying near streams could cause reduced streambank vegetation, and increased suspended solids and chemical pollutants.

Wildlife

The construction of 50 waterfowl nesting islands could cause short-term impacts to reservoir water quality. Suspended solids and turbidity would increase due to runoff from exposed soils on islands and damaged shoreline areas.

Recreation Access

If physical access for recreation purposes is obtained into the areas described in this alternative, recreation use would increase. This increase would create localized problems on segments of the 30 miles of woody floodplain types identified in Chapter 3. These problems would include streambank erosion and sedimentation to the river. Vehicular travel during wet periods would further increase the impacts.

Conclusion

Grazing management under this alternative would improve watershed conditions significantly. There would be 28,383 acres of vegetation manipulated to reduce erosion susceptibilities and runoff potentials. Wild horse management would significantly benefit watershed conditions since erosion and runoff would decrease. Due to the small area proposed for timber harvesting, impacts to watershed would be insignificant. Average annual runoff could be increased by only 0.4 acre-feet in the cutting areas.

Development of an environmental education site and a wild horse interpretive site would cause localized increases in erosion and runoff.

Water quality and streambanks would improve under this alternative. Short-term insignificant impacts to reservoir water quality would be negative due to waterfowl nesting island construction. Physical access to rivers could cause small segments of increased streambank erosion, but are insignificant.

The loss of soil in this alternative due to erosion would be irretrievable but not irreversible. There would be no irretrievable or irreversible loss of water resources.

Vegetation

Grazing Management

Improved grazing management practices would result in significant improvement in range condition and productivity, particularly on the 22 "I" allotments.

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However, there are also significant actions proposed on some M and C allotments (see Table 1.8 for summary of current range condition by category).

Dense canopies of sagebrush account for 14,120 acres in the I allotment and an additional 7,400 acres in the M and C allotments. These areas would not significantly respond to grazing management in the short term. There would be some response over the long term, but trend studies in existing AMPs have shown this response to be slow. Vegetative manipulations are required on these sites to show a significant improvement in range condition in the short term. There would be a positive but insignificant response to grazing management in the absence of vegetative manipulation.

The prescribed burning of 21,520 acres combined with grazing treatments would improve 12,912 acres presently in fair and poor condition, to good and excellent condition over the long term, assuming 40% of the planned burn area would remain unburned. Sagebrush would be significantly reduced overall, but not eliminated due to the typical mosaic patterns resulting from unburned islands of sagebrush.

Interseeding practices to renovate unproductive crested wheatgrass stands would improve approximately 5,118 acres of crested wheatgrass. Forage increase estimates based on studies in Canada and Montana (Lodge, Smoliak and Johnson 1972) showed that productivity of crested wheatgrass can be doubled by interseeding 1 pound of alfalfa per acre.

The annual spraying of 45 acres of leafy spurge with Tordon would reduce its density in the treatment area (100 acres) and control the possibility of its spreading to surrounding areas. Treating this small acreage has a relatively insignificant impact on total leafy spurge problems in Carbon County. A cooperative effort between landowners and other Federal and state agencies would help control leafy spurge in BLM grazing allotments and help prevent it spreading to other lands.

Discing or chiseling treatments combined with prescribed grazing treatments would improve 1,700 acres from poor and fair, to good and excellent ecological range condition.

Proposed water developments and fences would improve livestock distribution, facilitate grazing systems and reduce grazing impacts at watering sites, particularly drainage bottoms. The 16 proposed reservoirs would inundate approximately 50 acres of native vegetation. This would decrease forage available to livestock insignificantly. Increased trampling around these watering sources would occur but improved livestock distribution would result in better range condition.

Two proposed spring developments would allow for reestablishment of riparian vegetation on areas adjacent to a permanent water supply.

A minor short-term disturbance of vegetation along 31 miles of stockwater pipelines would occur. The disturbed area is normally confined to approximately 2 feet on each side of the pipeline trench and natural revegetation would occur within 2-5 years. The 47 proposed water catchments available forage by an insignificant amount. The benefits derived from these water developments would outweigh the short-term disturbances caused during installation. In addition to providing water for livestock, the catchments would also benefit some wildlife species. The 10 proposed wells and 46 miles of fence are necessary in implementing the prescribed grazing treatments but would not directly impact vegetation. All structural improvements, though not having a direct impact, would have an indirect positive impact on vegetation if placed in the proper locations. This would be accomplished through the implementation of grazing systems. However, vegetation can be adversely affected where improperly located range improvements cause livestock concentrations, trailing and overuse.

The majority of the actions proposed under this alternative are directed toward the I allotments. All of these allotments would either have a new AMP developed or an implemented AMP revised. Improvement in range condition would be accomplished through grazing management and vegetative manipulations. Following is a summary of impacts to vegetation resulting from actions proposed under this alternative. These figures only apply to the "I" allotments.

Acres maintained in excellent condition: 3,553
Acres maintained in good condition: 29,060
Acres maintained in fair condition: 5,000
Acres maintained in poor condition: 1,495
Acres maintained as rock outcrop: 3,839
Acres improved from good to excellent: 2,995
Acres improved from fair to good: 31,161
Acres improved from poor to fair: 5,458
Crested wheatgrass renovation: 5,118

Approximately 6,600 acres in the M and 800 acres in the C allotments are proposed for sagebrush burning. This would improve 4,440 acres to good condition, assuming a 60% burn. Additionally, there are 18 implemented AMPs that would continue to improve or maintain their current satisfactory condition. As proposed improvements are installed on non-AMP allotments, vegetative condition would also improve through better distribution of livestock.

Wild Horse Management

The practices planned in this alternative would have generally the same result as the livestock grazing management systems. Therefore, the guide to predicting range site responses to grazing management (see Appendix 4.2) was used to determine long-term changes in range condition. The following results would occur in the long term:

Acres maintained in good condition: 2,775
Acres improved from fair to good: 10,221
Acres maintained in fair: 2,277
Acres remaining in poor condition: 7,900
Acres maintained unsuitable: 15,040
Acres in Wyoming maintained at current conditions (estimated fair and poor): 6,083

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Wildlife Management

Fencing four reservoirs and planting 25 acres of dense nesting cover would result in insignificant but beneficial impacts to vegetation.

Timber Management

Approximately 45 MBF (20 acres) of timber would be harvested annually under this alternative. Impacts to vegetation would be mitigated through application of stipulations in the Programmatic EAR #MT-060-06-8-18.

Coal

Impacts would be the same as the Low Level Alternative though less area would potentially be available for further consideration due to further multiple use trade-offs.

Oil and Gas Leasing

Oil and gas development and production would disturb approximately 20 acres annually. The impacts to vegetation would be mitigated by stipulations detailing slope restrictions and revegetation standards.

Wild Horse Interpretation

Constructing an interpretive site and 1 mile of roadway would disturb 7 acres. This would result in an insignificant impact to vegetation.

Conclusion

A variety of methods, in addition to grazing management, are proposed to correct current unsatisfactory range condition under this alternative. The increases in range condition shown in the Grazing Management section are considered highly significant.

In the M and C category allotments, 4,440 acres would improve from fair and poor range condition to good range condition through vegetative manipulations.

Wild horse management, under this alternative, would result in the highly significant impacts to vegetation shown in that discussion.

Timber management, coal leasing and oil and gas development would have an insignificant impact on vegetation.

There would be no irreversible or irretrievable loss of vegetation resources in this alternative.

Livestock

Grazing Management

Rotational grazing systems would increase livestock stress slightly. However, this alternative would increase both the quantity and quality of forage as a result of grazing treatments and vegetative manipulations.

The higher protein forage produced from mechanical treatments would result in increases to the per-acre gains of livestock and maintaining these individual gains.

Development of crested wheatgrass for early spring pasture would provide nutritious forage 3 weeks earlier than native range (Wilson, Thomas and Jacobson, 1971). The per-acre gains could be increased as much as 50% where crested wheatgrass would be used as spring pasture (Johnson and Smoliak, 1979). Where alfalfa is interseeded, a potential for bloat would exist. Confinement of cows in these small pastures would make them more available to bulls, thus increasing the conception rate.

Additional range improvements, such as water developments, would improve distribution and reduce livestock stress by eliminating the need to trail long distances to and from water sources. Additional pasture fences would also improve livestock distribution but would contribute to stress when livestock are moved from one pasture to another.

Increased AUMs potentially available to livestock resulting from actions under this alternative is attributable to the following:

Grazing Systems:	3,120
Renovation of Crested Wheatgrass:	1,341
Sagebrush Burning:	5,910
Mechanical Treatments of Native Vegetation:	340
Total	10,711

See Appendix 4.1, Methodology for Grazing Management.

Example:

An allotment contains 1,000 acres and is geographically located in the 10"-14" precipitation zone of the western sedimentary plains. A survey indicates 500 acres are a silty range site in good condition, 250 acres are a silty range site in fair condition, and 250 acres are a shallow range site in fair condition.

Through improved grazing management, the 500 acres in fair condition would be improved to good and the remaining 500 acres already in good condition would be maintained as such.

Calculations:

Current Stocking Level

Acres silty in good condition = 500 x .3 AUMs/Acre =	150 AUMs
Acres silty in fair condition = 250 x .2 AUMs/Acre =	50 AUMs
Acres shallow in fair condition = 250 x .1 AUMs/Acre =	25 AUMs
Total	225 AUMs

Stocking Level After Improvement

Acres silty in good condition = 750 x .3 AUMs/Acre =	225 AUMs
Acres shallow in good condition = 250 x .15 AUMs/Acre=	37 AUMs
Total	262 AUMs

Land Tenure Adjustment

Lands identified for disposal in the Land Tenure Adjustment Area could result in the transfer of AUMs from the public sector to the private sector. However, using land exchanges for land tenure adjustments could reduce these AUMs. It is not known what grazing potential the acquired lands might have.

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Conclusion

This alternative would result in a significant increase of 10,711 AUMs (long term) which would potentially be available to livestock. A potential loss of AUMs from the public sector to the private sector could result from land tenure adjustment. These would be mitigated by using land exchanges as the predominant method of land disposal.

There would be no irretrievable or irreversible loss of livestock resources in this alternative.

Wild Horses

Wild Horse Management

Fencing the boundaries of herd areas would restrict the opportunity for the interchange of horses. This would reduce the opportunity for genetic variation and increase the probability of close inbreeding.

Cross fencing herd areas, to create pastures for grazing systems and forced movement of horses from pasture to pasture, would greatly reduce the free roaming behavior of the wild horses.

Selection of horses to be retained for breeding and excessing would be intensified to eliminate close inbreeding.

Selection for conformation, color and genetic characteristics typical of the Pryor Mountain wild horses would produce good quality horses, appealing to the eye of the viewer and in demand by adoptees.

Controlling the sex ratio favoring studs and maintaining the number of reproductive age mares at no more than 50% of the female population would yield a 10-15% annual reproduction rate. This would reduce the number of horses requiring excessing annually since most would be retained to replace normal annual death loss.

Controlling the numbers of horses in balance with proper grazing capacity of each herd area would produce and maintain a healthy, viable breeding herd. Rotational grazing systems would result in significant increases in the forage supply. The potential carrying capacity of 179 head may be reached in the long term. Any increase in population would be based on monitoring of forage utilization and range trend improvement.

Timber Management

In the short term, timber harvest activity would cause the horses to move from the higher elevations. This would impact the lower elevation range because of the heavier grazing pressure. This would result in a potential for increased loss of soil productivity due to wind and water erosion.

In the long term, selective timber harvest within the heavily timbered areas of the horse range would benefit wild horses and horse management. Thinning the existing stands would provide an opportunity for growing additional forage for the horses. More open stands reduce the ability of the horses to hide and escape during capture efforts and data collection processes.

Oil and Gas Leasing

Wild horse habitat may be adversely affected since the horse range may be leased. The application of special stipulations would reduce the impacts caused by exploration and production.

Classifications

A protective withdrawal would result in the prohibition of mineral exploration, production and development activities. This would provide positive benefits since the wild and free roaming behavior of horses would not be disrupted. Fewer encumberances to wild horse management would result if minerals exploration and development did not occur.

Wiid Horse Interpretation

In the short term, an area established for interpretation anywhere on the horse range would temporarily alter the natural behavior of the horses. In the long term, certain bands of horses may avoid the development area while others would accept its presence.

Wilderness

Wilderness designation would have an insignificant, though positive, benefit to the wild horses because intrusions on their wild and free roaming behavior would be minimized.

There could be long-term effects on wild horse management. Restrictions on new water developments could result in a slower rate of habitat improvement, less wild horses and increased operating costs.

Conclusion

Cross fencing would have significant impacts to wild horses and wild horse management. Controlling horse populations and sex ratios would result in a healthy, viable breeding herd.

A protective withdrawal would allow for continued wild and free roaming behavior of the wild horses.

In the short and long term, a wild horse interpretive overlook would have an insignificant adverse impact on wild horses.

Designation of the study units as wilderness could have significant adverse impacts to wild horses over the long term, if some range improvements could not be installed.

There would be no irreversible or irretrievable loss of wild horse resources in this alternative.

Wildlife

Grazing Management

Given no other resource constraints the proposal to burn 21,520 acres of sagebrush as part of the grazing management program could destroy 18% of the Federally managed antelope winter range in the resource

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area. Sage grouse could also be significantly impacted by this burning. A total of 28 sage grouse mating grounds and associated wintering and nesting habitat on public lands could be affected. This amounts to 25% of all known grounds located in the resource area. Approximately 8% of the chukar partridge habitat could be affected by burning. Annual vegetation created by burning could benefit chukar partridge, however. Burning would result in negative impacts on nongame species dependent on sagebrush communities.

Forty-one miles of the woody floodplain zone are identified in I category grazing allotments. Improving 80% of this vegetation type to good to excellent ecological range condition through grazing management would improve an important wildlife habitat.

Constructing 16 reservoirs, 47 water catchments and 2 springs would disperse livestock and improve range condition, providing additional spring and summer forage for deer and antelope and nesting cover for upland birds, nongame birds and waterfowl. These improvements would provide water sources for nongame and upland game, particularly chukar partridge.

Livestock Management

Vegetative manipulation may have a short-term impact due to increases in surface runoff and sedimentation to water bodies, but recovery within 1 year would benefit aquatic habitat by improving watershed conditions. Likewise, improving 41 miles of woody floodplain vegetation would help stabilize water courses, filter out sediment, provide shade to live streams and help maintain a base flow in perennial streams.

Developing 16 new reservoirs would result in a loss of 50 acres of habitat. This impact would be insignificant when compared with the opportunities for allotment management plans prior to their implementation.

Wild Horse Management

Impacts from wild horse management under this alternative would be the same as those described in the Continuation of Existing Management Alternative.

Wildlife Management

Projects such as installing 20 watering catchments would improve chukar partridge, sharptail grouse, sage grouse and nongame habitat. Each water source expands available chukar partridge range by an estimated 320 acres.

Constructing 50 waterfowl nesting islands, fencing or partially fencing 7 reservoirs and seeding 25 acres of dense nesting cover would increase waterfowl production by approximately 350 ducks annually.

Additional raptor nesting sites would provide nesting for approximately 20 pairs of birds.

Fencing seven reservoirs would enhance adjacent aquatic habitat by reducing livestock trampling and thus sedimentation. The construction of 50 waterfowl nesting islands may add sediment and increase turbidity in those specific reservoirs. Riprapping the islands would minimize erosion caused by wave action. The addition of three fisheries reservoirs increases this fishing opportunity by 60%.

Timber Management

Impacts from timber management under this alternative would be the same as those described in the Continuation of Existing Management Alternative except that less area would be available for further consideration due to possible multiple use trade-offs.

Land Tenure Adjustmont

The identification of over 59,000 acres in the resource area as suitable for exchange affords a significant opportunity to acquire lands with more desirable wildlife habitat. Disposal, through sale, could mean the loss of wildlife habitat if land uses change, and would preclude the opportunity to acquire other wildlife habitat through exchange.

Classifications

Impacts resulting from mineral segregation are the same as those described in the Continuation of Existing Management Alternative.

Recreation Accass

Acquiring recreation access into areas secluded from the public would eliminate the security of the wildlife species in those areas. Additional access could force the movement of some species and reduce the populations in these isolated tracts of public land.

Access to public lands would also accelerate streambank erosion and sedimentation which may degrade aquatic habitat. In most areas this impact would not be significant due to the absence of water sources.

Off-road Vehicle Use

Restrictions on 139,800 acres of public lands in Musselshell and Carbon Counties would result in a significant increase in the acreage protected. As such, wildlife would benefit from reduced harassment that might result from recreational ORV use.

Off-road vehicle restrictions would also help maintain good watershed conditions, thereby reducing erosion and sedimentation into aquatic habitats. However, these positive impacts would be insignificant due to the limited amount of water sources in the areas proposed for closure.

Conciusien

Burning 21,520 acres of sagebrush could potentially adversely affect 18% of the winter antelope habitat, 25% of the sage grouse mating grounds and 8% of the

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total chukar partridge habitat on public lands. However, the growth of annual vegetation created by burning could benefit chukar partridge and antelope.

Improving the woody floodplain zone through grazing management and water developments for livestock and wildlife would significantly improve wildlife habitat.

Proper stocking levels of wild horses and intensive management of the range could improve range conditions and wildlife habitat in the Pryor Mountain Wild Horse Range. This would be insignificant.

Twenty water catchments would significantly increase available chukar partridge range by 6,400 acres. Constructing 50 waterfowl nesting islands, fencing reservoirs and seeding dense nesting cover would result in an annual significant increase of 350 ducks.

Coal development would have insignificant adverse impacts to the available wildlife resources in the long term. Through application of the coal unsuitability criteria, mining plans and strict reclamation stipulations, impacts are not expected to be significant. However, there would be additional habitat disturbances occurring away from the mining site associated with development of access roads and transportation of coal.

The use of land exchanges to acquire lands with higher wildlife habitat values would enhance opportunities for wildlife habitat management.

Segregation through a protective withdrawal in the Pryor Mountain area would prevent surface disturbances attributable to mining and provide security for some wildlife species.

Restrictions on off-road vehicle use in Musselshell and Carbon Counties would result in habitat protection and reduced wildlife harassment.

There would be no irretrievable or irreversible loss of wildlife resources in this alternative.

Recreation

Grazing Management

Range conditions would improve more rapidly and may likely reach their optimum level with this alternative. Wildlife habitat conditions for upland birds, antelope and deer would also improve and result in increased hunting opportunities.

Wild Horse Management

An additional 20 miles of fenceline would be proposed, which may restrict cross-country access. Improved range conditions would produce similar results to those described above.

Wildlife Management

Three new fishing reservoirs would be proposed. This would increase fishing opportunities in an area where the demand for fisheries exceeds the supply.

Timber Management

Classifying 15,607 acres as protection areas would play a major role in preserving the recreational quality of these areas.

Land Tenure Adjustment

The Land Tenure Adjustment impacts would be the same as those described in the General Impact section.

Recreation Access

Physical and/or legal access would be sought into 10 areas. This would help meet local and regional demands for access to public lands.

Off-road Vehicle Use

Most of the designations would result in only minor impacts, since ORV opportunities are limited. The ORV designations for the South Hills would help resolve conflicts between landowners and recreationists, yet provide an area close to Billings for recreational use. The limited designation for northern Musselshell County would restrict cross-country travel (this is only significant during hunting season).

Wild Horse Interpretation

An interpretive overlook may assist the public in developing an understanding of BLM's wild horse management objectives.

Conclusion

Range and wildlife habitat conditions would improve significantly, resulting in a probable increase in wildlife populations and hunting opportunities. Reservoirs may be converted into fisheries as well as livestock and wildlife watering sources.

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The recreational quality of public lands would be preserved in the 15,607 acres classified for protection.

Some of the local and regional demand for access to public lands would be met should BLM obtain access to 10 identified tracts.

Off-road vehicle designations wouldn't affect recreational use. However, the two designations in the South Hills would provide an area for recreational use with reduced conflicts between recreationists and adjacent landowners.

A wild horse interpretation site would significantly increase public awareness of BLM's wild horse management program in the area.

There would be no irreversible or irretrievable loss of recreation resources in this alternative.

Visual Resources

Grazing Management

Installing 16 reservoirs would result in moderate negative impacts in the short term. In the long term, these projects would enhance the visual quality by producing additional vegetation.

Installing 47 water catchments would impact visual qualities but would be designed to meet VRM class guidelines. Negative impacts would result from numerous range project proposals. Two spring developments, 10 wells, 31 miles of pipeline, 44 miles of fence, 6,818 acres of mechanical treatment, 21,520 acres of sagebrush burning and 45 acres of noxious weed spraying would negatively impact visual resources in the short term. The majority of these projects (70-80%) are located in Class III and IV visual classification areas. The cumulative impact of these proposals would detract from scenic quality and could lower Class III areas to Class IV. Grazing treatments would have the long-term potential to improve scenic quality through increased vegetation and improved watersheds, especially in Class IV landscapes.

Wild Horse Management

The large number of developments (15-19 miles of fence and 7-8 water projects) would result in high to medium negative impacts. Increased numbers of horses and placement of additional range improvements, would result in beneficial impacts in terms of increased vegetation in the long term.

Wildlife Management

The large number of proposed projects (20 water catchments, 50 waterfowl nesting islands, 7 reservoirs, 20 raptor nests and 3 fish ponds) would primarily be located in Class III and IV visual areas. These proposals would be designed to meet VRM class guidelines.

Timber Management

Timber management proposals would result in positive impacts to visual resources. The annual allowable cut of 45 MBF would be insignificant. The visual qualities would be protected on 15,607 acres.

Coal

Impacts to visual resources would be the same as those described in the Low Level Management Alternative.

Oil and Gas Leasing

There would be minimal impacts under this alternative. The majority of the activity would be in Class III visual areas and would meet the VRM class guidelines. Visual quality in the 70,000 acres within the special stipulation areas would remain static.

Classifications

Classification impacts would be the same as those described in the General Impact section.

Recreation Access

Providing access into 10 areas would have a slight negative impact on visual quality because of the possibility of increased littering and vandalism. The presence of roads would also degrade visual quality. Restricting ORV use in these areas to existing roadways would reduce the impact.

Off-road Vehicle Use

Restricting off-road vehicle use over 139,870 acres would benefit visual resources.

Wild Horse Interpretation

The proposed parking lots, roads and building would have a negative impact to the visual resources in a localized area.

Wilderness

Wilderness designation would ensure the preservation of visual quality by prohibiting impairing activities.

Conclusion

The impacts to visual resources under the grazing and wildlife management proposals would be insignificant. Most of the proposed developments are located in Class III and IV visual classification areas. Proposed vegetative treatments would improve visual qualities in the long term.

Intensive management of the wild horse herds in the Pryor Mountains would result in short-term negative impacts. In the long term, vegetative conditions would improve, thereby improving visual qualities.

Withholding 15,607 acres of commercial timber lands from potential harvest would preserve scenic qualities.

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Additional recreation access would have a negative, but insignificant, impact on visual quality. ORV restrictions would play an important role in preserving visual qualities.

Visual qualities would be negatively impacted in the vicinity of a wild horse interpretive overlook.

Wilderness designation would preserve visual resources.

There would be no irreversible or irretrievable loss of visual resourses in this alternative.

Cultural Resources

Grazing Management

Discing, crested wheat seeding, spring developments and reservoir, water catchment, pipeline and well construction would disturb 1,842 acres. This total excludes 5,365 acres presently planted into crested wheat and assumed to be already disturbed. Nine cultural resource sites may be encountered. Seven sites would be avoided; two would be mitigated.

Wild Horse Management

Water catchment construction would disturb 4 acres. There is less than 1% probability of encountering cultural resources.

Wildlife

Water catchment and fish pond construction would disturb 14 acres. There is a 2% probability of encountering cultural resources. Any site would be avoided.

Timber Management

Cutting 20 acres of timber a year would disturb 500 acres in the long term. There is a 78% probability of encountering a cultural site. The site would be avoided.

Coal

In the long term 365 acres would potentially be disturbed. There is a 56% probability of encountering a site. Impacts to the site would be mitigated through either avoidance stabilization and protection of resource values or data recovery.

Oil and Gas Leasing

Drilling 10 wells a year would disturb 500 acres in the long term. Two sites may be encountered, and both would be avoided.

Land Tenure Adjustment

The disposal or exchange of approximately 49,809 acres may impact 168 cultural sites. Based upon current inventory information and professional judgment, it's assumed that 5% of sites located within the current assessed disposal and exchange area would be highly significant and/or rare, and best kept within Federal ownership for the public. Therefore, eight sites would be avoided through ownership retention. The 160 remaining sites may or may not qualify for the National Register of Historic Places. Those that do would be mitigated if the budget permits (see Appendix 4.7), or transferred out of Federal ownership after consultation with the Advisory Council on Historic Preservation (36 CFR 800). Those that do not qualify would be transferred along with the acreage.

Recreational Access

The BLM is unable to quantify recreational access impacts. However, vandalism to acquired or existing sites may result from recreational use.

Off-road Vehicle Use

Except for restricted areas, the BLM is unable to quantify ORV impacts to the majority of the lands in the resource area open to such use. However, vandalism and site deterioration may result from ORV traffic.

Environmental Education

Development of the Acton area would disturb a small portion of the 60 acre tract. There is a 9% probability of encountering a cultural site, which would be avoided.

Wild Horse Itnerpretation

Development of a wild horse overlook in the southern ½ of the Pryor Mountain Wild Horse Range would disturb 7 acres and has the potential to directly and indirectly impact seven sites, one of which is eligible to the National Register of Historic Places.

Wilderness

Wilderness designation would also reduce potential ORV impacts and vandalism to 44 sites.

Conclusion

Anything less than 5% probability of encountering a cultural site has not been computed.

The proposals in this alternative would disturb or impact 11,943 acres. One hundred and eighty-nine sites would be encountered. Twenty sites would be avoided; 4 sites mitigated; and 165 sites mitigated or transferred out of Federal ownership. Due to mitigating practices, these impacts would be insignificant. Any site inadvertently destroyed in this alternative would be irretrievably and irreversibly lost.

Wilderness

Grazing Management

Twin Coulee WSA—There would be no significant impacts to wilderness values from proposed grazing management actions. Only 600 acres of the study area is used for livestock grazing with 69 AUMs licensed. There are no proposals for range improvement projects.

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Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU—There would be no impacts on wilderness values as none of the lands in the three study units are licensed for domestic livestock grazing.

Wild Horse Management

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU—Intensive management of the Pryor Mountain wild horses would improve range condition and should allow a healthy population to increase in size. Both of these factors would benefit wilderness characteristics. Intensive development, such as forced movement of horses from pasture to pasture, installation of water catchments (one proposed in Pryor Mountain WSA), boundary fences (17-19 miles of boundary fence and 2 miles of cross fence) in the Pryor Mountain WSA, could slightly impair wilderness characteristics. It is highly unlikely that these projects would be foregone with designation as none of them would be so extensive as to impair the apparent naturalness of the three areas.

Timber Management

Twin Coulee WSA—Timber management in the Twin Coulee WSA would not impact the wilderness qualities as there would be no harvest under this alternative.

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU—All acreage including the 600 forested acres in Pryor Mountain WSA would be protected. Timber management would be a benefit to preserving wilderness values with this alternative.

Oil and Gas Leasing

Twin Coulee WSA—There would be no significant impacts to wilderness values from oil and gas leasing. Impacts would be the same as those discussed in the Continuation of Existing Management Alternative.

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU—Leasing oil and gas in the Pryor Mountain complex, with special stipulations to protect natural values through stringent rehabilitation, would probably result in no significant impacts to the wilderness values present. The BLM considers the potential for discovery of oil and gas reserves to be low and the probability of exploration and/or development is also low.

Wilderness Management

Twin Coulee WSA—Wilderness designation would result in the protection and preservation of 6,870 acres. However, as discussed in Chapter 3, Evaluation of Wilderness Quality, this WSA, while containing outstanding opportunities for solitude, has little else to offer in enhancing the quality and diversity of the NWPS. The area has little opportunity for primitive recreational use. There are some scenic vistas in the WSA, but because the area consists of a series of deep parallel drainages with dense stands of timber, these vistas are limited.

Since there are no valid existing rights and the entire block contains public lands, the area would be manageable as wilderness over the long term.

Pryor Mountain WSA—Wilderness designation would result in the protection and preservation of 16,927 acres. This WSA contains exceptional opportunities for solitude and offers diverse primitive recreation opportunities. There are a number of special features described in Chapter 3. All of these qualities would combine into one outstanding area which would enhance the quality and diversity of the NWPS.

The entire WSA is included in the Pryor Mountain Wild Horse Range and as such is managed to retain its wild character. Wilderness designation would ensure long-term legislative protection of those values. Because of its size, lack of resource conflicts and the fact there are no inholdings, this area could be managed as wilderness.

Burnt Timber Canyon WSU—Wilderness designation would result in the protection and preservation of 3,950 acres. Like the Pryor Mountain WSA, much of this area possesses outstanding wilderness values. There is one area of approximately 525 acres in the southern tip of the area which lacks vegetative screening, contains the remnants of uranium prospecting and would offer little to the quality and diversity of the wilderness system. Because of its size, the 3,950 acre area could be best managed in combination with the contiguous Lost Water Canyon U.S. Forest Service Wilderness Study Area. Other than its small size, there are no resource conflicts or landownership patterns which would affect the long-term manageability of the area as wilderness.

Big Horn Tack-On WSU—Wilderness designation would result in the protection and preservation of 4,550 acres in two separate tracts. As discussed in Chapter 3, Evaluation of Wilderness Quality, this area, while containing some outstanding opportunities for solitude, is affected from offsite sights and sounds. The area is not of sufficient size or configuration to be managed as wilderness on its own. With this alternative, the area is only suitable for wilderness designation if the contiguous Park Service study area is designated as wilderness.

Conclusion

In the case of Twin Coulee WSA, there are few resource conflicts which would affect the ability to manage the area as wilderness. However, the quality of the area is such that inclusion in the NWPS would do little to increase the quality or diversity of this system.

The Pryor Mountain WSA and Burnt Timber Canyon WSU contain no resource conflicts which would affect their long-term manageability. Both areas contain outstanding opportunities for solitude and primitive recreation as well as a number of special features. Both areas would enhance the quality and diversity of the NWPS.

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The Big Horn Tack-On WSU contains some outstanding opportunities for solitude and primitive recreation. The area is too small to be managed as wilderness unless the contiguous National Park Service study area is designated a component of the National Wilderness Preservation System.

There would be no irreversible or irretrievable loss of wilderness resources in this alternative.

Social

Grazing Management

The social well-being of the families dependent upon the 43 affected ranches would improve in the long term. Eleven of these operations fall into the small herd size category where the positive effects would be greatest. Since the proposed actions would be developed jointly by BLM and the operator, it's anticipated that the affected operator's attitudes would be positive.

Coal

The coal impacts are the same as those described in the Low Level Management Alternative.

Attitudes Toward the Alternative

No specific information on attitudes toward this alternative has been collected. This alternative proposes higher levels of BLM management and involvement, with more restrictions on development and greater protection of the environment. These actions may be viewed by some as unwarranted governmental interference and control. Others may consider these actions necessary in order to provide adequate resource protection.

Based on the attitudes toward specific issues (Chapter 3, Social and Economic Conditions) it appears that those individuals and groups concerned with environmental protection would support many aspects of this alternative. These include the restrictions on timber harvest, oil and gas leasing and the deletion of additional coal because of multiple use constraints, the retention or development of two environmental education sites and the enhancement of wildlife habitat. Some individuals may favor the proposal to designate the four areas under study as part of the National Wilderness System. They would probably favor land exchanges where high value recreation land or wildlife habitat was acquired, but oppose land sales.

Individuals and groups concerned with resource development may feel the increased restrictions on timber harvest, oil and gas leasing and land to be made available for coal leasing would hinder development. They may oppose the inclusion of the four areas in the NWPS. In addition, some individuals may favor the increase in land sales while others may feel this could create problems with resource development.

Ranchers would react positively toward this alternative because it increases the number of AUMs available for livestock. Individuals who are concerned about coal development would favor the inclusion of environmental, economic and social planning steps in determining the land to be made available for coal leasing. Individuals or groups who wish to purchase public lands would favor the increase in land sales proposed in this alternative.

Ranchers who are not currently in a position to purchase public lands may be concerned about increases in sales.

Recreationists would react positively to this alternative because it includes increased hunting and fishing opportunities and increased access. Depending on many factors, this group would be divided on whether wilderness designation would increase or decrease recreation opportunities.

Individuals who favor intensive management of the wild horse herd and development of the wild horse interpretive overlook would favor this alternative.

Conclusion

The social well-being of the families dependent upon the 43 affected ranches would improve in the long term. Moderate impacts to the social organization in Fromberg could occur due to the development of the subsurface mine. This alternative would probably be viewed favorably by individuals and groups concerned with environmental protection. However, those individuals concerned with resource development may feel this alternative proposes too many restrictions on development.

Economics

Grazing Management

Ranch Related Economic Impacts: See Appendix 4.1 for an explanation of the methodology used in this section.

The short-term impact on ranch income in this alternative would be minimal. The only identifiable change in AUMs would be the temporary disruption of grazing as mechanical treatments are applied or grazing systems implemented.

In the long term, 43 ranches would show an increase in income due to a 38% increase in BLM AUMs. These increases are shown in Table 4.8 by representative size category. The average change in net annual income for the representative livestock categories ranges from an increase of $380 on small operations (13% of their current livestock income) to $2,400 on very large operations (4% of their current livestock income).

Increased income resulting from increases in BLM forage would improve the economic well-being of operators in a number of ways. Those individuals who might have diverted funds for allowance for depreciation, deferred maintenance or deferred principal and interest payments would be in a position to use more funds for these purposes. Increased income might also be used to raise the living standards of some operators.

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In this alternative, permit values would increase $7,300 for the small operations, $18,600 for the medium operations, $25,000 for the large operations and $37,500 for the very large operations in the long term. This represents a 38% increase in permit value for each representative size category. These increases would have a beneficial effect on ranchers' borrowing capacity and the sale value of affected ranches. There would be no short-term change.

Timber Management

The existing annual cut of 45 MBF would continue to meet local demand for BLM timber and have no impact on earnings and employment related to wood products. The current annual cut is less than 1% of the total volume received by sawmills in the resource area for 1981.

Coal

Economic impacts are the same as those described in the Low Level Management Alternative.

Land Tenure Adjustment

An adjustment in landownership pattern could mean a decrease of payment in lieu of taxes (PILT) to counties involved. The PILT funds for the State of Montana have decreased 65% from 1979 to 1982. Those counties which contain large Federal acreages would be in a somewhat better position in terms of property tax revenues if some public lands pass into private ownership since PILT payments are less than property tax payments.

Wilderness

All the study areas would be recommended for wilderness designation under this alternative. There are 600 acres with 69 AUMs licensed in a single allotment (#4936) in the Twin Coulee WSA while the other study areas are not grazed by livestock. Wilderness designation would have a negligible impact on grazing activities since this use would continue. There is no timber harvesting occurring in the areas and none is planned under the Continuation of Existing or High Level Management Alternatives. Therefore, no additional timber values would be foregone. There are 166 mining claims in the Twin Coulee WSA and accessibility and exploration of known deposits might be inhibited by vehicle use restrictions.

Information necessary to calculate the value of minerals is not available for the study areas.

Conclusion

In the long term, 43 ranch operations would have increases in income due to increases in BLM AUMs. These income increases range from 13% on small operations to 9% on large operations. The High Level Management Alternative would have an impact on the economy of the area due to coal development. The community of Fromberg would experience some increase in economic activity while other areas would experience little or no impact. It is expected that the impact of a population influx on community services in Fromberg would be minimal. Other resources would have little or no impact on employment and earnings in the resource area.

There would be no irreversible or irretrievable loss under this alternative.

TABLE 4.8: ESTIMATED LONG-TERM IMPACTS OF THE HIGH LEVEL MANAGEMENT ALTERNATIVE ON NET ANNUAL RANCH INCOME ON AFFECTED RANCHES

Ranch Size Category	Size by # of Brood Cows	# of Ranches	Average Increase BLM AUMs Per Ranch	Average Annual Net Income Per Ranch	Change in Income $	Change in Income %
Small	1-100	11	73	$2,846	380	13.3
Medium	101-250	14	186	$10,662	1,209	11.3
Large	251-499	7	250	$24,501	1,600	6.5
Very Large	500-up	11	375	$65,341	2,400	3.7

Source: BLM, 1982

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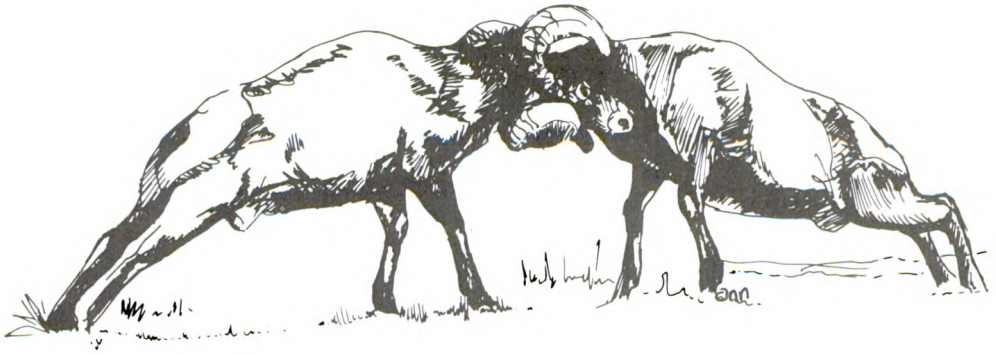

Five

CONSULTATION AND COORDINATION

CONSULTATION AND COORDINATION

This Billings Resource Area Resource Management Plan (RMP) was prepared by specialists from the Billings Resource Area Office, with assistance from the Lewistown and Miles City District Offices and the Montana State Office. Disciplines and skills used to develop this EIS were: vegetation and rangeland use, animal husbandry, recreation, climate, sociology, economics, geology, hydrology, soils, cultural resources, wildlife, fisheries, graphics, editing, printing, public affairs and typing. Writing of this environmental impact statement (EIS) began in October 1982 following a complex planning and data gathering process over the previous 18 months. The process included inventories of resources, public participation and coordination with other agencies. Consultation and coordination with agencies, organizations and individuals occurred in a variety of ways throughout this process.

PUBLIC INVOLVEMENT AND CONSULTATION DURING DEVELOPMENT OF THE DRAFT EIS

An active public participation process was conducted during the development of the draft EIS. Open houses were held in Billings and Lewistown, Montana and Lovell, Wyoming; news releases were sent to area television stations and newspapers; individual and group meetings with representatives of local organizations were held and a public notice in the August 26, 1980, *Federal Register* was used to focus public attention on the issues. Comments were also received from other Federal, state and local government agencies.

The major goal of the public participation process was to identify the issues the public wanted considered in the draft EIS. The procedure included mass mailing an issue identification brochure, requesting information on issues individuals felt should be considered in this process.

WILDERNESS COORDINATION MEETINGS

Coordination meetings were also conducted with the National Park Service (NPS) (Bighorn Canyon National Recreation Area) and the U.S. Forest Service (Custer and Lewis and Clark National Forests) to discuss the Bureau of Land Management's (BLM's) wilderness management proposals. The other agency plans were reviewed and BLM's Preferred Level Management Alternative is in keeping with those plans.

Wilderness proposals and the other issue areas addressed in this RMP were discussed with local and state officials. Public meetings to discuss wilderness proposals were held in Lovell, Wyoming and Billings and Lewistown, Montana during May 1982.

OTHER AGENCIES AND ORGANIZATIONS CONSULTED

The Billings RMP team consulted and/or received comments from the following during the preparation of the draft EIS:

Special Interest Groups

Ada County Fish & Game League
American Fisheries Society
American Horse Protection Assn.
Billings Motorcycle Club
Billings Rod & Gun Club
Bronco Exploration
Leland Cade
Center for Balanced Transportation
Crow Indian Tribe
Custer County Rod & Gun Club
Defenders of Wildlife
Environmental Information Center
Fergus County Farm Bureau
Fisheries Society
Friends of the Earth

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Humane Society of the U.S.
Clarence Hunsucker
International Society for the Protection of Mustangs & Burros
Izaak Walton League of America
Peter V. Jackson
Laurel Rod & Gun Club
Lewistown Chamber of Commerce
Lewistown Rod & Gun Club
Magic City Motorcycle Club
Montana Automobile Association
Montana Chamber of Commerce
Montana Farm Bureau
Montana Farmers Union
Montana Geological Society
Montana Power Company
Montana Stockgrowers Association
Montana Wilderness Association
Montana Wildlife Federation
Montana Woolgrowers
National Audubon Society
National Council of Public Land Users
National Wildlife Federation
Natural Resources Defense Council, Inc.
Nature and Wildlife Society
Donald M. Nettleton, Burlington Northern Railroad, Inc.
Nevada Outdoor Rec. Assoc., Inc.
Northern Natural Gas Ex. Div.
Northern Plains Resource Council
Old West Regional Committee
Pacific Legal Foundation
Public Lands Council
Rainmarker Motorcycle Club
Rimrock 4 by 4's
Rough Riders, Inc.
Sierra Club
Society for Range Management
Southeastern Montana Stockgrowers Assn.
State Grazing District Assn.
State Soil Conservation Committee
Mike Stude
TAP
The Spoke Shop
The Wilderness Society
The Wildlife Society
Trout Unlimited
Wild Horse Organized Assistance
Wild Horse Research Farm
Wildlife Management Institute
Wildlife Society
Yellowstone Snowmobilers Assn.
Yellowstone Valley Audubon Society
Edward D. Zarytkiewicz
Lovell Chronicle
Western Energy Company
Western Environmental Trade Association

Local, State and Federal Government Elected (as of October 1982)

L.M. Abner
Earl R. Adams
Alfred Bassett, Jr.
Honorable Max Baucus
R.E. Baumann
Chet Baylock
Esther Bengtson
Oscar Biegel
Big Horn County Commissioners
Cecil Blackler
Hubert Brabec
William S. Brinkel
James H. "Jim" Burnett
Carbon County Commissioners
Musselshell County Commissioners
Chuck Cozzens
Bruce Crippen
Robert Dozier
O.S. Ellis
P.R. Esp
Harrison G. Fagg
William Fox
Tom Hager
Tom Hannah
Mark Haynes
Larry P. Herman
Herb Huennekens
Raymond Jeffers
Thomas F. Keating
Gerald R. Kessler
Les Kitselman
Ronald Kotar
Curtis C. Kuehn
Charles Lane
Honorable Ron Marlenee
Roy W. McCaffree
Jean McLane
W. Harold McLauchlan
Honorable John Melcher
Dick Mercer
David A. O'Hara
Ole Oiestad
Earl Osse
W.R. Patte
Pete Plenty Hawk
Jim Rannalls
Ann "Pat" Regan
Ezra G. Rickman
Hershel M. Robbins
Jeff E. Roberts
Myron O. Skurdal
Wes Teague
J.J. Thoreson
Tom Towe
Joseph Vicars
Wheatland County Commissioners
Honorable Pat Williams
J. Melvin "Mel" Williams
David E. Wilson
Calvin Winslow
Yellowstone County Commissioners

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State and Local Government Executive

Larry Budge
Department of Community Affairs
Department of Natural Resources & Conservation
Department of State Lands
Environmental Quality Council
Andrew Epple
George Freeman
Douglas Hart
Kim Kuzara
Montana Department of FW&P
Montana Fish & Game Commission
Montana Historical Society
James Neely
Office of B & BP
Wayne Van Voast
John Young

Federal Agencies

U.S. Forest Service
U.S. Geological Survey
Water & Power Resources Service
U.S. Department of Commerce
U.S. Fish & Wildlife Service
U.S. Forest Service
National Park Service
Soil Conservation Service
Thirteenth Coast Guard District
U.S. Army Corps of Engineers
Department of Transportation
Environmental Protection Agency
Federal Aviation Administration
Federal Highway Administration
Federal Housing Administration
Library and Information Service
Missouri River Basin Comm.
Bureau of Land Management
Bureau of Mines
Advisory Council on Historic Preservation
Bonneville Power Administration

Individuals

Over 325 individual livestock permittees were contacted for their views, as well as area schools, libraries, newspapers, radio and television stations and numerous individuals.

PUBLIC INVOLVEMENT AND CONSULTATION DURING THE DEVELOPMENT OF THE FINAL EIS

The draft EIS was filed with the Environmental Protection Agency on April 5, 1983. The notice of availability and a public hearing announcement were published on April 15, 1983 in the *Federal Register*. This notice announced a 90 day comment period commencing on April 15 and ending July 15, 1983.

Over 1,000 copies of the draft EIS were mailed to Federal, state and local governments, private groups and organizations and individuals for review and comment. News releases provided information on how to obtain copies of the draft. Formal public hearings were held in Lovell, Wyoming on May 31, 1983 and Billings, Montana on June 1, 1983. A BLM official presided over each hearing and three BLM representatives served on the panel. A court reporter recorded the hearings verbatim. A total of 49 comment letters were received during the 90 day comment period. Responses to these comment letters and the public hearings are provided in this chapter.

A consultation meeting with representatives of the Governor's staff for the State of Montana was also held on September 8, 1983 in Helena, Montana. The purpose of this meeting was to inform these representatives of the major changes in the final EIS and to assure consistency with state or local plans, policies or programs.

The Billings RMP team consulted and/or received comments from the following during the preparation of the final EIS:

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SPEAKERS AND LETTER WRITERS

Speaker No.	Name	Comment No.	Meeting Location and Date
1	James Peters	1	Lovell, WY, May 31
2	Ron Serg	2	Lovell, WY, May 31
3	Hope Ryden	3,4,5,6,7,8,9,10,11	Lovell, WY, May 31
4	Daniel Henning	12,13,14,15,16,17, 18,19,20	Billings, MT, June 1
5	Georgia Frazier	21,22,23,24,25	Billings, MT, June 1
6	Clarence Pile	26,27	Billings, MT, June 1
7	Steve Charter	28,29,30	Billings, MT, June 1
8	Jeanne Charter	31,32,33,34,35,36	Billings, MT, June 1
9	Daryle Murphy	37,38,39,40,41,42	Billings, MT, June 1
10	R.L. Curtin	43	Billings, MT, June 1
11	Bob Tully	44,45,46,47,48	Billings, MT, June 1
12	Ed Dobson	49,50,51,52,53,54, 55	Billings, MT, June 1
13	Thomas M. Tully	57	Billings, MT, June 1
14	Verna Ratter	58,59,60,61,62,63	Billings, MT, June 1
15	Larry Field	64,65,66,67	Billings, MT, June 1
16	Mark Lenhardt	No Response Required	Billings, MT, June 1

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Letter No.	Name	From
1	Richard A. Strait	National Park Service, Denver, CO
2	William G. Binnewies	National Park Service, Fort Smith, MT
3	John G. Wood	Fish and Wildlife Service, Billings, MT
4	D'Arcy P. Banister	Bureau of Mines, Spokane, WA
5	Richard D. Gorton	Corps of Engineers, Omaha, NE
6	Eley P. Denson	Bureau of Reclamation, Billings, MT
7	James F. Devine	Geological Survey, Reston, VA
8	John G. Welles	U.S. Environmental Protection Agency, Denver, CO
9	Gov. Ted Schwinden	State of Montana, Helena, MT
10	Dick Hartman	State of Wyoming, Cheyenne, WY
11	Carolyn R. Johnson	Natural Resources Defense Council, Inc., Denver CO
12	Charles J. Griffith	National Wildlife Federation, Washington, DC
13	Russell J. Gaspar	American Horse Protection Association, Washington DC
14	Chuck E. Hitch	Montana Public Lands Council, Billings, MT
15	John D. Smillie	Northern Plains Resource Council, Billings, MT
16	Bill Cunningham	Montana Wilderness Association, Billings, MT
17	James Phelps	Montana Audubon Council, Billings, MT
18	Hank Fischer	Defenders of Wildlife, Missoula, MT
19	Jim E. Richard	Montana Wildlife Federation, Bozeman, MT
20	Marcella Sherfy	Montana Historical Society, Helena, MT
21	Emily Stonington	Bridger Environmental Education Program, Bozeman, MT
22	Daryle R. Murphy	Sierra Club, Billings, MT
23	Henry E. Reed	Meridian Land and Mineral Company, Billings, MT
24	J.R. Mitchell	Atlantic Richfield Company, Denver, CO
25	Alice I. Frell	Rocky Mountain Oil and Gas Association, Inc., Denver, CO
26	John D. Wells	Minerals Exploration Coalition, Denver, CO
27	Ron Sieg	American Colloid Company, Belle Fourche, SD
28	Richard T. Hughes	Chevron U.S.A., Inc., Denver, CO
29	Hope Ryden	New York, NY
30	Kay Bedford	Roundup, MT
31	Mary F. Brower	Roundup, MT
32	David Y. Arbenz	Helena, MT
33	Clyde A. Bray	Laurel, MT
34	Melissa L. Tuemmler	Great Falls, MT
35	Kirk Robinson	Bozeman, MT
36	Robert D. Hiaring	Billings, MT
37	Paul F. Berg	Billings, MT
38	Victor Ballek	Worden, MT
39	DeAnne Harbaugh	Hamilton, MT
40	Dorothy E. Palmer	Hamilton, MT
41	Fern Hardy Laughery	Billngs, MT
42	Patricia Oertli	Billings, MT
43	James A. Pickard, O.D.	Wolf Point, MT
44	Max Bauer, Jr.	Missoula, MT
45	Mrs. Eileen Schmidt	Roundup, MT
46	Michael K. and Phyllis J. Wells	Bozeman, MT
47	Gordon and Mary Ann Gildroy	Roundup, MT
48	Bob Chamberlin	Billings, MT
49	Michael J. Haaland, D. V.M., and other concerned citizens	Billngs, MT

The Lovell and Billings Public Hearings transcripts and the letters received during the 90-day comment period have been reprinted in this chapter. The numbered bracketing (1-392) in the left hand margin corresponds with the appropriate response. Our responses to all oral and written comments follow the reprinted letters.

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BUREAU OF LAND MANAGEMENT

IN RE:	
DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE BILLINGS RESOURCE AREA MANAGEMENT PLAN	PUBLIC HEARING

TRANSCRIPT OF PROCEEDINGS

The above-entitled matter came on for hearing at the Lovell Park Visitor Service Center, Lovell, Wyoming, on May 31, 1983, commencing at 7:00 p.m., before Mr. Dan Stark, Hearing Examiner.

P R O C E E D I N G S

MR. STARK: I'd like to start this hearing now. My name is Dan Stark, and I am the Hearing Examiner.

Let the record show the time is now 7:00 p.m., May 31, 1983, at the time and place for this hearing.

I would like to explain how I will conduct this hearing tonight. The subject of tonight's hearing is a draft environmental impact statement for the Billings Resource Area Draft Management Plan. The Bureau of Land Management prepared the EIS as required by the Federal Land Policy and Management Act of 1976. It is one of 144 that BLM was directed to prepare as a result of a court suit brought against BLM by the Natural Resource Defense Council.

The way we will receive testimony on this EIS is this: I will call forward in the order that you were registered, or have registered, those individuals who desire to give testimony. If you will then come forward and stand over at the podium here where I am and speak your name so the court reporter can make sure that he has it, and you may then proceed with your statement. If you have an extra copy of your oral statement, we would appreciate a copy of it. If you have any written statement to present, just leave it with the reporter.

After you have concluded, I will ask this group

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Mr. James Peters. 4
Mr. Ron Seig. 5
Ms. Hope Ryden. 6

to my left, if there are any questions about your testimony, to feel free to ask you questions. The panel, whom I will introduce in a minute, will be responsible for seeing that your comments that deal with the analysis of the draft EIS will be fully considered in the final EIS, which will be published this fall.

The panel is composed of Mr. Jim Beaver, Mr. Carl Hedrick, Mr. Jay Spielman. These gentlemen are staff specialists with the Billings Resource Area who helped prepare the EIS. The panel is here only to clarify points in your testimony that they don't understand. They will not cross-examine, and I have instructed them that they will not answer questions. This hearing is not a forum for BLM to explain its program, but rather an occasion for the public, yourselves, to state for the record its observations on the adequacy of BLM's work on the EIS thus far. It is my understanding that the BLM staff will remain available after this hearing to clarify any points about the EIS that need explanation. I ask that you avail yourselves of that opportunity.

It is also important to note that written testimony will be received on the draft EIS until July 15th. Written testimony will receive the same considerations as any testimony given at this hearing.

Are there any questions on our procedures?

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Fine. I would like to have the list of the names so far. Mr. James T. Peters, National Park Service.

MR. PETERS: Do you want me to come up there?

Most of the issues that the National Park Service would wish to have addressed were covered in the letter that we mailed to you earlier, and I don't think there is any need to reiterate those because they have already been entered into the record, I believe.

I do have a number of questions, but I think they should probably wait until the end. Is that correct?

MR. STARK: That's correct.

1 MR. PETERS: We wonder how the BLM would maintain existing wilderness values, while confining present use and management somewhere in the plan. Somewhere this statement was made.

I guess that's a question, too. That's probably the only comment that I would make in addition to what has already been entered.

MR. PETERS: Thank you, Mr. Peters.

Is there any other person here who would like to give testimony?

If not, I would like to declare about a ten-minute recess in case some other people might show up.

UNIDENTIFIED SPEAKER: I do know of some other people coming. Hope Ryden, they called about twenty

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minutes ago and they will be here.

MR. STARK: Let's make it about a twenty-minute recess then. We will just recess for twenty minutes.

[Recess.]

MR. STARK: It is now 7:30. I would like to call the hearing back into session. And we will call the people in the order as they are signed in to give their statements.

Mr. Ron Seig.

MR. SEIG: My name is Ron Seig. I am with the American Colloid Company. I just have a few comments to make. American Colloid has had mining claims for many years in the area in Carbon County that was discussed in the plan as was addressed in your EIS. What we would like to do is make certain that in your final draft statement, or your final statement, that you address the right of mining claimants to mine, drill, haul, and reclaim the lands that they have held for many years under the operations.

2 In particular we are concerned with Section 34 of Township 9 South Range 26 East which in the plan is proposed as an area closed to off-road vehicle use. American Colloid Compnay desires to make it clear in this final EIS that this area or this designation has no bearing on these valid mining claims, and we request that you might consider the boundary and whether it couldn't be

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2 cont. moved a little bit to the east to accommodate these claimants, take them out of the roadless area.

MR. STARK: Is there anyone else wishing to make a statement at this time?

Ms. Ryden, are you prepared?

MS. RYDEN: My name is Hope Ryden, and I am a wild horse enthusiast. I really have just questions that I want to be sure are reviewed before any decisions are made on these alternatives that have been proposed.

One of the questions I have is the starting point of this is that the wild horse population will be limited to 121. Now, this has been based on two factors, and those factors have been the overall forage production, which I might dispute, but I am not in such a good position to do that as I am to dispute the wild horse consumption rates. You have calculated this rate of consumption to be 1.25 conversion for cattle. That's the ratio that has been used.

Now, I would like to point out that the National Acedemy of Science's Committee on the Study of Wild Horses and Burros reported in their first-phase report and in their final report that that is a very high conversion rate, and if I could read, but I can't read in this light, maybe I could if I had glasses, forage consumption rates and animal unit equivalents--well, they state here that the

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suspicion has existed that the standard procedure for calculating animal unit equivalents may be inappropriate for horses, and the accepted definition of an animal equivalent unit, AUM, is 455 kilograms cow or her equivalent, and to convert among animal species, one merely divides the body weight of the animal in question by a factor of 455.

Now, they have used much more sophisticated methods enhanced by metabolic body weights and so on, and they come up with a different conclusion. The differences or similarities between horses and cattle occupying a common range, these indicate that on the average the horse consumed about fourteen percent more forage dry matter than did cows, not twenty-five percent more.

3 So given this, I see then in all your alternatives that you are limiting the horse herd to 121 animals, I think it is, by calculating these AUMs in the old way, but the National Academy of Sciences has reviewed all the literature and all the latest literature, and if you would do your calculation properly, this range could support 152 horses. That's the number one point.

Now, I won't have to read that so I will get up. And, also, if you would like to know where you can find more information on that, that's in the National Academy of Science Wild Horse and Burro Committee review of all the

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of all the literature, and it is on page 27, first-phase report.

I notice there weren't very many differences between the continuation and the preferred alternatives. The principal one was the manipulation of the sex ratio to reduce the two to one mare-stallion imbalance, and, of course, this is something that I have been proposing for a long time. Ever since this balance was skewed so badly when sixty male animals were removed and given away, this balance became so skewed that the sex ratio favored a high reproductive rate. It is obvious why. If you have more reproductive animals in a herd, you are going to have more offspring.

4 What I worry about here, I do believe that it is a very serious situation that you have let this herd get that skewed the wrong way, and that is one of the reasons you are having such a high reproductive rate, but I hope you are not suggesting a ratio less than fifty-fifty. If you got it down to fifty-fifty, you would not have the gross imbalance in favor of females that you now have. And that should not be too hard to do and it should solve a part of the problem that we have about how many roundups there are.

A related point is how you wish to go about perpetuating the characteristic of the Pryor Mountain

Wild Horses, and I do think that the wild horses have been doing a very good job of perpetuating their own characteristics. The best way is to let them do it, and to not limit the gene pool. The more animals that are removed, the tighter the gene pool, the more inbreeding occurs. The wild horses have done a very good job of getting a lot of color back out there, and I suppose the best thing that you could do is those horses that you do remove ought not to be the best ones in every case because what you would then leave would be the worse ones and eventually you would not have a very attractive looking herd.

4 cont. The high level management alternative seems to me to contemplate too much active manipulation of the animals, and I'm not sure that's what you meant, but I hope that you aren't suggesting that you truck animals around and you push them here and fence them there, because that will certainly detract from the wild, free-roaming aspect of this herd that is so attractive and is what a wild horse herd is all about.

5 I'm very concerned with the wildnerness designation. On page 116 the draft refers to long-term significant impacts in the event the Pryor Mountain is in fact designated wilderness, as BLM has recommended. Well, I would like to know what are these impacts and how they affect the wild horse proposals.

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7 The draft refers to the designation as reducing management options. Well, what options, and what does their elimination mean? This hasn't been spelled out. So I really would like somebody to respond to those questions.

8 I contacted a number of congressmen and senators to get an opinion on the compatibility of the wild horse refuge with a wilderness designation and I got a very definitive letter from Senator Scoop Jackson, who said that there is no incompatibility. As far as he's concerned, this is a wild horse refuge and if anybody at any date suggests that the wilderness designation alters that, to be sure to let him know.

9 The draft proposes to construct seven miles of fence, and that's on page 35. Two miles of this would be for capture operations. I would certainly like to know why this is being done and where it is being done and how much it costs and is it really necessary.

10 Also, it proposes five new water catchments. Now I was up on the mountain today and I have looked at a water catchment on Burnt Timber Tillotson Ridge for a number of years and I never see it with any water. Last year it was in tatters. One year I thought, oh, goodness, somebody has forgotten to turn the water on and I turned it on and I was almost arrested for having done that. But that tank

10 cont. up there has been devoid of water--the taxpayers paid for this. Now what in the heck are you talking about, five more catchments when you won't even turn the water on in the one you have?

It also suggests the acquisition of 2,040 acres of state and private land for the refuge. Well, I'm for enlarging the refuge. I don't know what land you are talking about, though, and I think that we need to know more about that, too.

11 So that's about all I have to say, and I really would like to get a response on some of these questions from somebody. Thank you for letting me make a statement.

MR. STARK: Well, thank you for coming.

Do we have any more? That being the case, there being no more statements being read or someone has handed some in, I will declare this hearing closed, and hopefully you will stay around long enough to discuss some of the issues that are brought up with the people from the staff. We can answer some of the questions. Some of the questions will have to be studied, and, of course, will be answered in the final document.

With that, we will close.

[Whereupon, the hearing in the above matter was concluded.]

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BUREAU OF LAND MANAGEMENT

IN RE:	)	
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DRAFT ENVIRONMENTAL IMPACT	)	PUBLIC HEARING
STATEMENT FOR THE BILLINGS	)	
RESOURCE AREA MANAGEMENT	)	
PLAN	)	
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TRANSCRIPT OF PROCEEDINGS

The above-entitled matter came on for hearing at the Ramada Inn, Billings, Montana, on June 1, 1983, commencing at 7:00 p.m., before Mr. Dan Stark, Hearing Examiner.

P R O C E E D I N G S

MR. STARK: I'd like to bring this hearing to order now. My name is Dan Stark, and I am the hearing examiner. Let the record show that it is now 7:02 p.m., June 1, 1983, time and place established for the hearing.

I would like to explain how I will conduct the hearing tonight. The subject of tonight's hearing is a draft environmental impact statement for the Billings Resource Area Draft Management Plan. The Bureau of Land Management prepared the EIS as required by the Federal Land Policy and Management Act of 1976. It is one of 144 that BLM was directed to prepare as a result of a court suit brought against BLM by the Natural Resource Defense Council.

The way we will receive testimony on theEIS is as follows. I will call forward in the order that you register those individuals who desire to give testimony. If you then will come forward and stand right where I am at here at the podium and speak your name to the court reporter so that he can make certain it is in the record, you may then proceed with your statement. If you have an extra copy of your oral statement, we would appreciate it. If you have a written statement to present, just leave it with the reporter.

The panel, whom I will introduce in a minute, will be responsible for seeing that your comments that deal with the analysis in the draft EIS will be fully considered in the

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final EIS, which will be published this fall. The panel is composed of Jim Beaver, Mr. Carl Hedrick, and Mr. Jay Spielman. These individuals are staff specialists from the Billings Resource area which helped prepare the EIS.

The panel is here only to clarify points in your testimony that they don't understand. They will not cross-examine, and I have instructed them that they are not to answer questions. This hearing is not a forum for BLM to explain its program, but rather an occasion for the public to state for the record its observation on the adequacy of BLM's work on the EIS thus far. It is my understanding that the BLM staff will remain after the hearing is concluded to clarify any points in the EIS that you would like to discuss. I ask that you avail yourself of that opportunity.

It is also important to note that written testimony will be received on the draft EIS until July 15th. Written testimony will receive the same consideration as any testimony given at this hearing.

Are there any questions you may have? Fine. I would like to call Mr. Daniel H. Henning.

DR. HENNING: My name is Dr. Daniel H. Henning, and I am a resident of Billings here and member of a number of environmental organizations.

First of all, I would like to ask several questions to this particular hearing, and specifically, as I read in the

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paper tonight it was on public land sales, I believe in yesterday's paper, and, you know, as well the EIS in general, but the announcement in the Billings Gazette did say public land sales. So this is a point I will be speaking to within this context.

12 At any rate, first of all, I would like to ask the costs that have been involved in all this public land sales stuff. Not only locally, but nationally. People say, okay, we are going to make money for the government and all that. Well, if you look at most of your time that is being spent by the BLM, I think we are talking about millions of dollars and I think we are talking about hundreds of dollars for this area here. And taking time away from valuable, wise resource management that the BLM personnel should be doing because of a politicalorder from Watts.

What I am saying here, it is costing the American taxpayer a bundle of money to go through this planning. I would say quite frankly, I teach public administration, I know pretty much the field, and I would say your top priorities have been on this, and this is a terrible waste of government manpower that we as taxpayers are paying for. And also equipment and this type of stuff.

The second question I would like to ask, they infer in the assets management program there is a lot of management costs. We are going to reduce management cost by selling these

little isolated parcels, you know. Well, for most them, BLM is not managing them. Maybe God is managing them, but the BLM sure isn't. One of my friends was out at Park City the other day--he lives out at Park City--and a couple of BLM guys came around and said, hey, where is this one area at, we can't find it. They finally pointed out that it was a side of a cliff, straight down. How much money has the BLM spent on managing that side of a cliff as well as other parcels in most cases they have never been out to? I mean, nature takes care of itself. And before the BLM was ever on the face of the earth, the land managed itself. In fact, that's probably a misnomer because the Bureau of Land Management really doesn't manage land. What happens is they just decide what other people are going to do to it. When they start arguing for management plans and all this sort of stuff, what they should frankly admit, if they are going to be honest, they decide who is going to do what, not management themselves.

13 At any rate, the big point here is that there is no management cost for most of these "isolated" parcels here and there.

The third item, and don't get me wrong, I happen to like ranchers. I'm from Ohio originally. If I wasn't a professor, I would be a rancher. One thing I would like to raise here is the point on this public land sales, there was

a secret memorandum in the Reagan White House Administration. I got it smuggled out by the environmentalists. It said if we have public land sales, there is going to be three groups that will oppose it. One will be the environmentalists. Of course, because they oppose everything. The sportsmen because they are going to see their public lands being stolen away. But thirdly the ranchers because they are going to have their 160 acres they have been leasing for years bought up by some speculator, and then they have a lot of critiques about it and it still is there.

So what the story is that the Reagan Administration secretly then decided, okay, we are going to back off, we are going to back off a little bit, and we will go ahead and supposedly get the ranchers on our side by giving the preference over land near their areas. That might work for a bit. But for most ranchers, they haven't got the money to buy all this land. Particularly if they go for $100 minimum market value.

14 And so my whole point is, one, I don't feel that any rancher should have preference over any other American citizen. In fact, I don't think the land should be sold to begin with. And if anything, I think the ranchers actually save a lot of money by leasing it the way they do now and it will cost them a bundle, plus it will open it up dangerously for a lot of foreign speculators and people--

there are a lot of people, really, you can ask the BLM people, they are getting calls all the time about people that are from out of state mainly who want to buy that land, and they got the money for it. They can put it up. And the whole point is they are speculators. They are not buying it for any kind of agricultural ranching purposes. They did this to get the ranchers on their side, but it is backfiring I understand because a lot of ranchers won't support it.

Okay. Now, another item here is that basically a lot of this land that is put up for sale could be used to swap to get public recreation sites and river frontage and everything else. And quite frankly I wouldn't mind swapping with some rancher who has some area he wants to get that is BLM land, public land, I'd say give them a great big hunk of it just for a little bit of his river land. I would be all for that. But if they sell it, that land is not up for swap, and then it is on the open competitive market and the ranchers will get hurt, the recreationists will get hurt, and the environmentalists will get hurt. The whole point is anything you people sell will not be up for grabs for recreation areas or for other stuff, including ranch adjustments and everything like that. That land is gone. It is in the hands of a speculator, usually from out of state or from Billings. And the end result is, I think, it is

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against the public interest.

15 So what I say here is that land is still valuable even if it might be forty acres here and there, put several of those forty acres together and give them to a rancher for a few acres down by the river or some reservoir or whatever. The whole point is it is taking land away from the American public that could be used for recreation; particularly around Billings. Around Billings we will get more and more pressures, recreational pressures, and that land is valuable. We say it is not valuable now, but it will be valuable as we get bigger and bigger. I hope Billings doesn't get any bigger, but it seems to be growing.

16 A fifth item is basically I feel this whole process, including the EIS and public land sales, is too confusing for the public. I mean a lot of you ranchers might know where exactly this is at and that sort of stuff. I used to be a wilderness ranger and I was lost for four and a half days. You people, I'm sure can find it. And you know where a lot of this stuff is at, at least around your area. But for the average member of the so-called Montana area around here, we don't know. And how we can speak with intelligence on all these little goody areas just like when they have the wilderness program with the BLM, like area No. 432, area No. 461, you know, nobody knew what they were talking about. It was a big farce. What we

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16 cont. need, quite frankly, are public administrators that will make a lot of these supposedly wise land management plans that don't confuse the public. As it is now, I mean I got professor friends of mine, they can't even understand half this stuff or where it's at. How many people have time beyond their actual work, beyond what they do, to really get down and sit down with that study area and drive out to all these things with a pickup and that sort of stuff where the BLM guys can't find it. How are we supposed to make intelligent comments?

Therefore, I say there is a vacuum. It is not really being a democratic process in this sense because it is just too confusing.

Now, that's why I say another thing will happen. Whenever you start selling public lands and the government is involved, there will be corruption. Just like with the coal sales. There is corruption as heck in the coal sales. And what's going to happen I think when they really throw a lot of this stuff open, it will be bad news. Because there is going to be too much stuff going on whenever there is stuff up like this for grabs.

17 The sixth item is basically under the Federal Policy Act of 1976 that the BLM operates under, it is my definite opinion that you have to do this for each parcel. You just can't drop them that way or just do it like a blanket

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thing. And this is probably one of the biggest points in this regard. What they are trying to do now is to get through the approval of criteria, to get through the approval of criteria for say these 5,000 acres, and then they can start bringing in hundreds of thousands of acres. Then they can start bringing in the speculators and then they can start bringing in the people that are from out of state or foreign corporations which Watts encourages to really buy up a lot of your lands. And what happens then? The ranchers can't compete. And if we approve this criteria here for selling

18 public lands, we are opening the door for wholesale murder, I think.

In this regard I might mention there is overwhelming public support for public land sales. This is one of the things. Here we have a public hearing and we got here mostly ranchers, a few people that might be--couple environmentalists I noticed as they walked in, Bill Prior is at all these kinds of meetings. The whole point is where is the public beyond people that might have some special interest in buying the land or defending it a little bit?

19 But the big point here is that why doesn't the BLM, if it really wants to know, conduct a public survey? Ask Billings people how they feel about selling their public lands. You know what they are going to say? They are going to say, bug off, don't sell them. These are public lands

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that somehow over the years we fought for them and by gosh they belong to the public. Now we have a crazy man, Watts, as Secretary of the Interior now, and he will sell us down the tube. He's already leased things for one hundred years and he is going for 200, and we are paying three and a half cents a ton for coal.

My whole point is here that because we have somebody that is a screwball up there who is not a Secretary of Interior and has no business holding that position, how we can let him do this kind of assets management is crazy, really. It's insane.

My whole point is the public doesn't want it. They are not here tonight because they figure you guys should know better, maybe, and the whole implication, and I'm not blaming you because you guys are doing your job and I know BLM people, a lot of them try to do very good work, but the point is that the public doesn't want it. These are their public lands that they have had for centuries now, and they don't want them ripped off.

Okay. On the EIS, I will probably make the general remark, I don't understand the specific questions I have asked, maybe some accounting for how much money was spent by personnel and other stuff, I would probably make the general statement in just glancing through it, one problem I'm trying to finish up a book by June 15th, but I

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will say whatever I have glanced at, looked at, it is simply too detailed. The Natural Resource Defense Council, when they got this suit around, they don't want all this kind of stuff. All they wanted you to do is improve the grazing lands, improve the BLM lands. They didn't want all this sort of stuff. I think it could be a lot simpler. Keep maybe some appendix like you got there, but I think you could do a very simple thing that would just be a few pages. They are doing this with EIS's now. They used to be that thick and now they are going down and down.

20 So on the EIS, one, I would say it is too detailed and complex, unless you were some kind of an expert in a particular area to really make intelligent comments on.

I would say, overall, I am totally objecting to thepublic land sales, as you probably gathered.

MR. STARK: I would like to call Georgia Frazier.

MS. FRAZIER: My name is Georgia Frazier. I represent as President the nearly 500 members of the Yellowstone Valley Audubon Society in town and out of town. It is a local chapter of the National Audubon. And one of our concerns is land use policies of the various units of government. This is obviously one of them.

21 The first thing I want to comment on is the wilderness study units in the EIS, the draft environmental impact statement. We recommend the Big Horn Tack-on transfers

21 cont. to the jurisdiction of the National Park Service. It is adjacent to Big Horn Canyon National Recreation Area and is dividied from the Pryor Mountain Wild Horse Range as well as the proposed Pryor Mountain Wilderness by a rough semblance of a road on its west border. This is a useful

22 dividing line and eliminates artificial boundaries. It should make administration easier. We recommend the Twin Coulee, (Mt-067-212), Pryor Mountain (MT-067-206), and Burnt Timber Canyon (Mt-0670205) for wilderness. The recommendations for Twin Coulee and Pryor Mountain follow the "high level management alternative." Our position is for 3,430 acres for Burnt Timber Canyon, following the "preferred level" alternative. Twin Coulee is on the southeast 'lank of the Snowy Mountains, in Golden Valley County, with attractive scenery, interesting geology, and other supplemental values. The adjacent Forest Service lands are being studied under Rare II for wilderness. As is known, this may change, but we recommend the BLM study areas for wilderness as outlined above as long as the options are likely to remain open.

23 We can support sale or exchange of BLM lands only when it will benefit the public and the public interest. Our preference is for exchange rather than outright sale. Hundreds of thousands of rnage land has been broken to the plow in the last few years in eastern Montana. While the

23 cont. BLM has nothing to say about this, in turn the fact should influence land sales and exchanges. It may be that isolated tracts in the vicinity of population centers, such as Billings, should not be disposed of at all. BLM isolated tracts may well be like islands in the ocean insofar as the wildlife is concerned. That such parcels are difficult

24 to administer should not be the controlling factor. One such is the site north on Highway 87. Adjacent to the highway it is an administrative problem, but the whole valley of mixed private and public lands is important to antelope, as well as sage grouse and sharptails.

We were slightly confused in the EIS that wildlife programs were not considered important enough to be analyzed,

25 but wildlife management is a major concern in the draft EIS. Habitat is the key to the whole business. If this is not available, wildlife and recreational values decline accordingly.

Thank you.

MR. STARK: I would like next to call Mr. Clarence Pile.

MR. PILE: Mr. Chairman, I, too, like the doctor previous, I thought this hearing was in regard to the land sale. Could you say whether there would be a specific hearing later on that would concern that directly?

MR. STARK: Well, I don't think there will be a

specific hearing as to the land sales. I think this EIS did address the potential sale for disposal, for exchange, of some lands, what they call the bubble area. Now, as far as that goes, discussion of the sale of the lands is germane to this hearing. So if you wish to make the statement, fine.

MR. PILE: My name is Clarence Pile and I am a rancher in Greycliff, Montana. I was specifically concerned with the BLM land sale because I read continual reports in the paper that small, isolated tracts are being designated for sale, and since I lease some of those small, isolated tracts, I am deeply concerned in that regard.

26 I ask one question, whether you people know how those small, isolated tracts came into being? You see, back in the homestead days that land was free, it was given to those people for nothing, and these small isolated tracts are those pieces that were so totally worthless that nobody wanted them when they were free, and now suddenly they have acquired a very sizable value, which scares me completely.

The doctor said in the beginning the one up by Park City was a rocky cliff. Some of ours are rocky, bare hillsides with no water that nobody wanted. So they just left them sit there. Well, then, later on the Bureau of Land Management decided to lease them to the

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ranchers. They are part of our ranch. We use them, but I do not feel that we get the same amount of use off of some of those areas that we do off of other parts of our ranch, but, nevertheless, we do use them and we do pay rent for them.

The reason I am scared is because of the figures that I keep hearing tossed around, $100, $150 an acre. You see, when you talk about a small isolated tract, maybe forty acres or 120 acres, that isn't so bad, but when you lease several of those that might total up to 600 or a thousand acres, you are talking about a fairly sizable tract.

I would ask, is there anyone here in the audience, I'm not asking you to brag, that could sit down tonight and write me a check for $150,000 out of your checking account?

You see, that's what this land sale might involve. I don't know whether I can borrow that much money or not. Maybe I can, but when you talk about a sum like that, you are talking about maybe fifteen to $20,000 in interest alone. Well, you know, that takes quite a chunk out of my annual income.

27 So I am very, very concerned about it from that standpoint, and I would ask that somehow or other this thing be evaluated very closely, appraised, whatever, for

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27 cont. its worth; that it should not be a flat figure just because there are so many acres out there and it is worth so much. I think each tract of land deserves a special look.

That's about all I can say.

MR. STARK: Thank you, Mr. Pile. Our next person giving testimony will be Mr. Steve Charter.

MR. CHARTER: My name is Steve Charter. We ranch north of Billings. We have two units. One is along Highway 87 north of Billings, and the other unit is in the Bull Mountains, and I would like to speak on two separate subjects. One is the land sales, and the other is the proposed coal swaps.

On our place along 87 we have several small parcels of BLM lease that is mixed in with our deeded land, and the present situation with these small parcels, these particular parcels of ours is intolerable to us, and I think it should be intolerable to the general public because of the littering, shooting, vandalism, and the destructive use of off road vehicles, which the BLM is either unwilling or unable to control, and trespass onto our property from the BLM is impossible to stop, and I will bet probably 5,000 people have told me, oh, I thought this was BLM, and maybe it isn't their fault, they get a map, they can't read and there is BLM out there and so they just assume all is. I'm real sympathetic to what the lady from the Adubon was saying about maybe the BLM would

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prevent it from being plowed and a lot of other things, I agree with that, but this out there is hardly an island for wildlife. There is nothing on that BLM that is going--living that is going to survive. There is probably on a given Sunday, there is probably one hundred people out there shooting in every direction.

On parcel of BLM we actually fenced at our own expense to keep the cattle off of it, and we continue to pay lease on it but we don't get any use out of it at all.

And the present situation is not multiple use because we can't run cattle with the level of activity out there, and I'd say the damage done is a discrace. As far as being public land, I don't think the general public would want that. It is a few people that do that kind of damage, and I don't think that's what the general public wants for its land.

And I think it is a joke to tolerate this kind of out and out destruction and then to tell ranchers not to overgraze. Not that ranchers should be overgrazing, but I think neither should be allowed.

We don't agree with Secretary Watts general policy to sell off public land, but we do think these small parcels that are unmanageable, that something should be done. I would say if they weren't sold, that maybe a possible trade or something like that should be worked out.

19

But these parcels on us, I think the present situation just can't go on.

These BLM parcels are intermixed with our deeded property, and if we lose them, it will make our deeded land, some of it, unusable for grazing. Some of it lies a quarter section kitty-corner with another section. If that was fenced out, it will make portions of our ranch unusable to us. All we could afford to pay for this land would be grazing land prices, because that's what we use it for. We wouldn't be able to compete with land speculators.

28 We understand that the BLM has the authority to make direct sales, and that's how we feel these parcels should be handled. I guess you might call it the old code of the west is you don't buy or sell land out of the middle of somebody else, and we admit this is breaking down as land speculators dominate the scene, but we also don't think it should be the businesss of the federal government to be missing up family farms and ranches.

And the other subject, with the Burlington Northern coal swaps in the Bull Mountains, we are opposed to the swapping of coal with the BN and its subsidiaries. We can't see how a trade would benefit anyone but the company. They already own many billions of tons of coal in Montana, and they have too much influence on development

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29 right now. Why should the federal government help them consolidate their holdings further? Why give them so much power? How does this benefit the public?

While it increases the railroad's potential for monopolistic profits, the Powder River coal sales are making everyone suspect that Interior is putting private profit first. Swapping coal with BN's enormous advantage would prove it. We and other ranchers in the Bull Mountains lease a considerable amount of land from the BN with our deeded acres. Any move by the federal government to give the railroad more control and more power would make it much more difficult for us to stand against the railroad's projects.

The federal government should back policies that support the family farm and ranch and not monopolistic corporations dominating coal or agriculture.

Thank you.

MR. STARK: Thank you, Mr. Charter.

30 MR. CHARTER: I guess maybe I might add one comment as far as the draft impact statement itself. I found it kind of confusing and a little hard to follow just trying to read it. Thank you.

MR. STARK: Our next speaker will be Jeanne Charter.

MRS. CHARTER: I am Jeanne Charter and I have a

few comments. We thought we would split it up. Mine are all about the proposed leasing of coal in the Bull Mountains, and our first question is back on the impact statement being rather confusing, what is it that you propose to lease? One place in there you say ninety-five odd hundred acres

31 and then it goes down to 3,242 acres, and then later you say that all that would be distrubed would be 357 acres. And we would like you to put what you are talking about doing on a map so we know what we are up against. There is nothing in there that is specific, and we think something that would affect us very seriously, we would like something a lot more concrete on leasing proposals.

My second question is what would be significant landowners' opposition? In the impact statement it says if there is significant opposition, you won't lease in an area. From your survey of landowners requests, what I

32 see on it there were thirty sections where landowners, like Steve said, it is checkerboarded so Burlington Northern owns the rest so we can't say we have got it all, we lease half of it. Thirty sections opposed it and a few that were subdivided. There are four and a half sections of landowner owned property that were in favor of large scale leasing, and that seems to me to be significant opposition.

I mapped out on your map how that lies. I will

give you a copy of it. You didn't do it yourself in terms of what was opposition, and it looks like kind of an unworkable situation up there, unless the idea is to just pressure people into caving in. Consolidated Coal owns

33 one ranch up there and they are a big piece of interest, but I don't know that that--they really meet the qualification of local opposition or interest in strip mining.

Another point that's a little smaller but for us it isn't real small, you mention a railroad spur into there would probably be uneconomical, even if you lease coal because they are so expensive. I think that's probably true. If there were a spur built up Fatty Creek or Half Breed Creek, it would cause a tremendous amount of

34 impact on the farms and ranches up there. If instead they truck-haul coal out of say a 300,000 ton mine a year, I don't think that's a minor impact.

I have got some friends that live in Appalacia in Kentucky and I visited them once and those county roads up there are--there is coal hauling trucks running on them night and day, and in a rural agricultural area, it would make a big difference on what it was like to run stock. They are not fenced roads, and we pay the taxes

35 and in Appalacia they aren't even licensed. I don't know if it would be that bad in Musselshell County, but they aren't licensed in Kentucky. They just run on free.

35 cont. Even if they paid their taxes, it wouldn't be a small impact on an area like ours.

And the last point is you say in there that your preferred level of leasing is based on "after consideration of cumulative impacts to other resources and social and economic benefits." You say that, but you never explain specifically how you arrived at leasing everything that surface owners hadn't specifically opposed. I think you should have to explain how you come up with that idea. What I see is the positive benefit would be you could--you mentioned you could hire twenty-

36 five people to run some of these mines. The negatives of it are there is a lot of landowner opposition. You admit there is probably significant ground water impact. We are very dependent on springs in our country. There would be a lot of rural disruption, and I think you discount the difficulty of reclamation much too fast. Even people point to Colstrip as being a success. We kind of watch that because we are worried we would get stuck with it. We sure wouldn't want to have to run cattle at a profit off of what they have got down there.

Thank you.

MR. STARK: Thank you, Mrs. Charter.

I would like to call Mr. Daryle Murphy.

MR. MURPHY: Thank you. My name is Daryle Murphy.

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and I am representing essentially two organizations. First, the Yellowstone Basin Group of the Sierra Club, and, second, Montana Wilderness Association.

I believe I will start with some general comments. First of all, I don't think it is possible to do an adequate evaluation of the draft EIS in such a relatively short time. It is quite detailed, as a previous gentleman mentioned, and I think perhaps it may even be difficult to do a complete evaluation by the time of July 15.

However, regarding land sales versus land acquisitions, some of the ranchers who have spoken have pointed out the impacts land sales could have upon them. One interesting statistic that is included in the EIS is that the greatest dependency upon BLM leasing, leasing of BLM lands by ranchers, is on the smaller operators, and the larger the ranch, the larger the corporation, the less dependence on BLM lands there is. Therefore, 37 those that would be greatest impacted are the ones that can probably stand it the least.

I would support land exchanges if they were carefully studied and represented a sensible consolidation 38 of BLM lands in the public interest with as little impact as possible on the landowners adjacent to the land exchanges.

I should tell the gentlemen on the panel here that I will have some detailed written statements at some

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furture date prior to July 15th.

The remainder of my comments are involved with the wilderness study areas included in the draft EIS. First of all, one of the ones not recommended for wilderness is the Twin Coulee area which Georgia Frazier had mentioned previously. I would like to express the support 39 of myself and the Montana Wilderness Association and the Yellowstone Basin Group of the Sierra Club for designation of the Twin Coulees area as wilderness. I have been in communication with people from Lewistown from the Twin Coulee area and also with some of the people in the Montana Wilderness Association who specifically asked me to support this as wilderness. As many of you may know, it is contiguous to a national forest service, Lewis and Clark National Forest Wilderness Study Area which was not recommended for wilderness in Rare II. There is also substantial support for designation of that area as wilderness, despite the previous recommendation.

The wilderness in the Pryor Mountains, there is the Pryor Mountain Wilderness Area and the Burnt Timber Canyon Wilderness Area, both of which are recommended in 40 the draft for wilderness designation. I would like to support that with consideration given to closing the Tillotson Ridge Road which was originally recommended in 1973 in joint land use recommendations of the BLM and Custer

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National Forest. In my conversations with the BLM people in the Billings Resource Area, the primary reason that is 40 cont. given for leaving that particular road open is for administrative purposes having to do with management of the wild horse herd. Apparently there is a horse trap on--near adjacent to that road.

Management of wild horses would not be precluded by designation as wilderness. There is provision in the Wilderness Act for even vehicle traffic if it is necessary for management of an area.

Incidentally, one of my pet peeves is that ranchers--I guess it is not a pet peeve against ranchers but against some people who are not informing them of the facts--wilderness designation does not eliminate grazing at all. Grazing is allowed in wilderness areas.

Back to the additional area, which is not recommended for wilderness in the EIS, is the Big Horn 41 Tack-On. The southern portion of it which Georgia mentioned should be considered for an addition to the Big Horn Canyon National Recreation Area. I would support that. I think it is an excellent idea. I suspect the Big Horn Canyon Recreation Area people would support that.

Regarding wilderness for that as an additional alternative, in my discussion with Homer Rouse, who is the superintendent of the Big Horn Canyon Recreation Area

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in Fort Smith, he indicated to me they would very much like to see that area designated as wilderness, the southern portion of the Big Horn Tack-On, due to its being contiguous to their recommended wilderness area in the Big Horn Canyon National Recreation Area.

In addition, Dr. Henning had mentioned earlier about--I am changing the subject here--about a parcel of BLM land that represented a side of a cliff. I would like 42 to indicate that that does not necessarily mean it would not have significant value. It could be very valuable from the standpoint of wildlife habitat, especially with some kinds of animals that may use that as nesting sites.

I think that pretty much covers the oral testimony I need to give at present. As I said, I will supply a written statement well prior to the July 15th deadline.

Thank you.

MR. STARK: Thank you, Mr. Murphy. I would like to next call R. L. Curtin.

MR. CURTIN: I am in the same position of Mr. Pile and I didn't really understand what the meeting was to be about. I have a driveway to my property that crosses a piece of BLM land that I am leasing. I guess my biggest 43 concern is whichever way they decide to go, I would like to have the option of either purchasing, if that's the way it

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43 cont.

goes, or keep my lease as it is, because it is quite necessary to my operation to have the drive--I mean it is the only way to get to my place, let's put it that way. And it has been that way for a hundred years. The place had been homesteaded and it has been that way for years. I would like to have the opportunity, whichever way it goes, I would like the opportunity to keep that piece of property.

That's about all I got to say.

The statement, the draft, I agree with the rest, is a little bit complicated for me. That's about it.

MR. STARK: Okay. Mr. Bob Tully.

MR. TULLY: Good evening. My name is Bob Tully. I'm a rancher from the Bull Mountains near Roundup and I rise this evening, I must admit, in extreme prejudice in opposition to some of the recommendations portended in this environmental impact statement.

I will confine my comments to the issue of coal leasing and/or swapping.

First of all, could I have a show of hands, how many here consider themselves the public?

Okay. How many here are BLM employees?

MR. STARK: It is very difficult for the court reporter to do that and I don't think that's a part of the statement.

MR. TULLY: Okay. I think my point is well taken.

I would like to ask a question then of the BLM and any of the public who are informed, how many of you are familiar with this--

MR. STARK: Sir, we are to listen to your statement, but we are not allowed to answer questions.

MR. TULLY: It will take more time then. I have in my hands study reports done at great effort by the Bureau of Land Management concerning the Buffalo Creek and Bull Mountain coal fields project. Back in 1973 when a good many people, informed or brainwashed, still believed that there was in fact such a thing as an energy crisis, these booklets were published after a great deal of work by the BLM determining that in fact, despite the belief at the time of the immense brownouts, freezing in the dark, and all of the other catchword phrases that we were exposed to by development proponents, the BLM at that time came up with their considered judgment to the effect that coal leasing in the Bull Mountains was neither advisable or necessary. And I challenge the Department of the Interior and the Bureau of Land Management to tell us now what compelling changes in conditions obtain today that did not obtain in 1973 when a lot of us were exposed to a great deal of baloney concerning how badly America needed energy development.

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Anyone who reads the newspapers today knows we

are in a glut of electricity, we are in a glut of petroleum, we have a glut of natural gas. We have more energy resources producible today than we know what to do with. And it is causing our electricity bills, for example, to sky rocket, paying for unnecessary thermal generating plants that were built in the era of the '70's when, as I say, some people in industry, some people in government, and unfortunately apparently too many people in public life, believed that this dire necessity was in fact a necessity. I think history and time has shown this to be a grave error and the taxpayers are paying for it.

There are a number of conditions that I will refer to from this study booklet, and mind you this is the result of the government's own work, and these are conclusions made by employees of the federal government determining what should or should not be done with publicly owned resource values in my neighborhood.

It makes a contrast between the coal, for example, in the Bull Mountains and the coal in other areas of the Fort Union formation. The quality of the coal is admittedly, in this study, of very little significant difference as to btu content. However, it does recognize that the coal resource is extremely limited with regard to its production per acre disturbed. In fact, because of the physical

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45 cont.

layout, if you will, of the coal seam throughout the high ground in the Bull Mountains, the recoverable coal would be reflected by a narrow band like a layer in a cake, surrounding the perimeter of the coal field. And it compares very poorly with other coal fields in the Fort Union area.

For example, they have a somewhat inflated figure for the production per acre from the potential coal fields in the Bull Mountains. It is given at some 17,700 tons an acre. By actual history of experience in a test pit excavated by Consolidated Coal Company back in 1971, the recovery was $36,000 tons in six acres, as opposed to their projected 50,000 tons from six acres. You do the arithmetic and you tell me who is right.

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Further, the study goes on to contrast the recoverable stripable ratio contrast between three, at least three other major coal fiels in the Fort Union area. One of them is Decker, one is I believe Ashland, Birney, and so on, where they have much thicker seams of coal. The ratio average for Montana Fort Union as a whole is three to one overburden to recovery.

In the Mammoth Rehder in the Bull Mountains the ratio is 6.7 to one. That's not too good a good deal as far as recovery goes concerning the total acres damaged by the activity.

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I would like to leave, and I understand the

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48 court reporter has trouble with questions. I don't expect a good answer, but the question I would leave with the gentlemen from the Department of Interior, is what has changed in ten years other than the fact we have more energy than we know what to do with today, what has changed to so compellingly cause them to change some of their information, switch some of their facts, and switch their conclusion and recommend to one of now leasing 9,000 plus acres of coal in the Bull Mountains? I would really like to have an answer. I really don't think they are going to give me one.

Thank you very much.

MR. STARK: Thank you, Mr. Tully. Mr. Ed Dobson.

MR. DOBSON: I'm Ed Dobson. I live here in Billings. I'd like to say a little bit about several of the aspects of the plan before us. A lot of what I would like to say has already been said better by a lot of other people. I will start with the lands themselves and the sale and so on. I think one of the biggest problems we have with management of BLM lands is the nuisance factor, and Steve Charter pointed that out pretty well. If you are going to deal with public access in an

49 area such as we have here in central Montana with small tracts of land surrounded by private land, I think the

49 cont. solution isn't to simply try to get out from the management prerogatives, even under the guise of raising a little money for the treasury, I don't think the sale of these lands is going to benefit either Montana or the local landowner in the long run. I think, first of all, we need to look at more sound management practices so we can cut out the nuisance value on these lands as experienced by people who live out there.

Of course, Mr. Curtin pointed out some of the problems he might have with access and so on if this land is lost. He's got a real good point. Unless he can be assured that he's going to have the kind of access to other property, his property generally, and not suffer from the loss of uses from the sale of this land to some other party, we can assume it would be some out of state party, that's where most of the money is coming from, if not out of the country. The best way to deal with this is not to simply throw the baby out with the bath water, but let's get hold of the management of these lands in such a way and we can solve these problems.

And start with regulation. The second step

50 would be to look at the exchange possibility. I don't think we need to sell any of these lands, but if it would help somebody on a private land to not have a piece of public land right in the middle of them and maybe he's got

a piece on the edge with a border with somebody else that might work better, be kind of like a better place to put a power line on private property is right down the boundary, not right across the middle of the whole field or irrigated alfalfa or any place else where it will

50 cont. disrupt the operation, but I don't beyond exchanges where it will benefit the landowner and hopefully benefit the public, maybe through exchanges we could have access to areas that are not in the way of ranch operations and where we could benefit wildlife and the public user, I think exchange is the best way to go and it needs to be looked at on a case by case basis.

Now, the coal, I'm totally against this swap. From what Mr. Tully pointed out, and, of course, I have known about that for some time, to me the first I heard of it it seemed like it had to be a joke. It is a pretty cruel joke. It looks as though we have got a Secretary of the Interior who is just determined to make anybody miserable who has ever expressed any concern about the values and resources we have on the surface of the land here in Montana. That's the only reason I could see for putting up the coal in the Bull Mountains for lease again, would be just to make somebody uncomfortable who happens to be sitting on top of it.

Now, if Congress had wanted railroads to have a

block of land, they would have given it to them in the first place. I don't think that Interior can or should try to get around this, especially understanding the intent of the surface owner protection provisions that we have for the landowner now, which Congress passed knowing fully about the checkerboard ownership patterns. The intent of Congress clearly is to protect the surface owner in this regard, and if they had wanted railroads to have a block of land, they would have given it to them. They woundn't have said, Interior, you go out there and exchange all of this once we get it given away or sold, or however they disposed of it. Of course, railroads disposed of a lot of surface and kept minerals. That's another ball game.

51 Now, the wilderness, I'd like to see all the areas you have identified as wilderness study areas go into the system. I use these areas. I like them. In a way it is good to have areas where people can go and not have to inquire and not be bothering somebody else to go on

52 their place. In the case of some of the wilderness study area we have here we have grazing permits on it. It is a good idea to know what kind of problems you might get into if you get out there in somebody's permit area and deal with that.

It is also good to have land set aside in a way we can keep it like it is. I think the only way we will

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get to see these landsstay as they are is to put them into the wilderness system. For example, up there in Twin Coulee. One of the ideas why we can't put that in the wilderness is because we have some oil shale leases up there. Might have some mining of oil shale.

We seen what happened down in Colorado where Exxon and some other companies pouring millions and millions into oil shale development, and then suddenly the price of crude goes down and pulls the rug out from under them and they abandon the whole project down there. Turned thousands of people out into the street. No jobs.

53 I think it is folly to simply write off an area for its wilderness potential just because you have some oil shale development up there in the future. Especially when the Wilderness Act itself says you can mine. You can mine in wilderness areas.

Now, I know a lot of people don't like that about the idea, gee whiz, it is wilderness, how come you cane mine in there? But that's the way the Act reads. You can do thet. That maybe a little bit more difficult for you to deveop the claim in a situation where it is wilderness, but the fact is if the value of the resource is there, money will be there, the money will be there to develop that. And maybe it is better off for all of us to have enough restriction on the development when it does

come by having it in the wilderness. They are going to do it anyway.

54 I agree with the wilderness designation for Pryors, Burnt Timber Canyon. I want to encourage you to go ahead. I think the idea, if you have a horse trap in there that you are worried about, you can go ahead under the management options, not only the agency can use motorized access in a wilderness area, but under certain conditions, a permittee can use motorized access in a wilderness area as well. There is no problem with that under the right conditions. It can be done. So we got to deal with this on a case by case basis as well.

55 I would like to see the Big Horn Tack-On go into the wilderness. If it improves the management to have it go into the park, then let's take a look at that, but I don't mind to see it maintained in the BLM if it goes into wilderness. It is something that should be looked at in greater depth.

56 Finally, I would like to see the wild horse herd managed at a lower number of animals to get the forage back to a better level than it is now. I would like to see them kept under a hundred.

Thank you.

MR. STARK; Thank you. Our next speaker is Mr. Thomas M. Tully.

MR. TULLY: I would like to make a short statement. Tom Tully. I'm from the Bull Mountains as well.

57 I would like to say I think it is totally ridiculous to consider leasing any land in the Bull Mountains for coal leasing or lease any coal in the Bull Hills given the present market conditions for coal in Montana, Wyoming, elsewhere in the country. And, also, I'm totally against any kind fo a land swap with Burlington Northern as far as coal leasing.

That's it.

MR. STARK: Thank you. The next person to give testimony would be Verna Ratter.

MS. RATTER: I really don't know if the South Hills have been discussed because I came in late. I was at another meeting.

I'm from Cedar Park Subdivision. We adjoin the South Hills where the dirt bikes and the four-wheel drives reign supreme.

58 We are wondering, we the people in the South Hills, wonder why BLM is in violation of their own federal public land of noise nuisance and wildlife protection and erosion protection in tha South Hills? They are letting dirt bikes and four-wheel drives just completely take it over and the erosion is very plain to see. You can see it just--you don't even have to go up in the hills to see it.

59 We also would like to know why BLM can't--or they admitted they can't administer or control the four-wheel drives and the dirt bikes that are up there right now, and when I went through the booklet, I couldn't really see too much in there that said that they were going to improve the situation or even if they were planning on doing anything.

Another thing there is supposed to be marshals that we were supposed to be able to call because our local police department is very good about coming, but they can't do anything on federal land. We have to have two witnesses, plus we have to have a federal marshal there. Well, by the time we call a federal marshal, if you can get one, so far they have either been out of town, they have been sick, or their phone has been disconnected. We have never been able to get a federal marshal.

60 So, therefore, you can't get any help really. Like I say, if they are off the federal property, the local police departments have been helpful, but they really can't do anything when they scoot over into the federal land, and we can't do anything about it.

The city or other places, rather, around the city have been closed because of the acknowledged nuisance, noise, and just plain--well, nuisance I guess and abuse by

61 the bikers and the four-wheel drives. We are wondering why

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61 cont. the South Hills can't be closed.

62 If they do decide to have some new regulations, we were wondering who is going to enforce them, since they have nobody to enforce them now. Making rules is fine, but if you don't have anybody to enforce them, you might just as well forget it because they aren't going to do any good.

63 And we also would like to know why the homeowners, the homeowners, mind you, are responsible when--I will admit the Billings Motorcycle Club helped us put up the fences and they have in the past helped us maintain them, but now when the fences are cut, they use wire cutters, they carry those as standard equipment, if they don't have the equipment to just break through the fences, they cut them. But when they are cut, we are responsible to fix them.

My husband and I recently spent five hours up there in the hills fixing fences and I have pictures at home of them before we fixed them. The posts were broken down, wires were cut, big cable taken down. We spent five hours up there fixing fences. We came home. We didn't even have a chance to take off our dirty shoes. My neighbor called and said, did you see what happened? Where we had fixed it, there were some four-wheel drives and dirt bikes going through. They had already cut them.

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I mean, there is no supervision. There is no nothing up there. I think if you can't control it, then close it.

We used to have deer walking down our roads. You dont' see deer there any more. The wildlife flowers are almost non-existent also. BLM, as far as I have been able to understand, is supposed to protect the property and I don't think they are. I don't think they have the means, and if they don't have the means, I think they should just absolutely close it up, leave it to the people who are on foot. It is a very nice area. There are a lot of joggers up there. I like to walk up there. We don't walk in the summer, it is too dangerous, the bikes and four-wheel drives will run you over. The people who do run run early in the morning before they are out if they can get there early enough. We just feel that they should be closed.

MR. STARK: Thank you, Mrs. Ratter.

The next person to give testimony is Mr. Larry G. Field.

MR. FIELD: My name is Larry Field. First, I didn't come here intending to speak. I didn't prepare an outline or anything. So while listening to these people, I threw together some sloppy notes here that I will go through.

I would like to say that I am farm raised. I

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grew up south of Laurel, and I'm going to speak on the proposed sale of the land or exchange of the land.

I was farm raised. I have a degree in biology. So between the two, I think, you know, I have some idea of what is going on in nature.

I enjoy outdoor activities. I belong to several outdoor organizations that I won't mention because I'm not representing them. I'm here as a concerned citizen. We do have a problem with landowner-recreationalist conflicts, and the more public land we lose, the more conflict we are going to have, and this will close more public lands and therefore compound the problem.

Personally, I am totally against the sale. Number one, my understanding of public land is that it belongs to us. I personally own roughly one two hundreth

64 millionth of that land. Nobody has come to me and asked me if I want to vote to sell it. As far as I'm concerned, before that land can be sold, they should hold a national referendum vote and let the people who own that land say if they want it sold or not.

I agree with Dr. Henning the swap for equal value is a good idea. Several of the ranchers that have commented here have stated this land doesn't have much value, but it does have value. So what if we have to give one hundred acres of low-grade grazing land for one good acre of river

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access? To me it is worth it. Swap the land so the public has somewhere to go. Don't get rid of the land.

All right. Now, I may have been misinformed. I have been reading the newspaper, and that's always not a reliable source, but as far as the money goes, I have heard talk of using this money from this sale to pay the national debt. Why? Why pay the national debt with the money? That land is ours. If they sell it, if they are

65 going to sell our land, why do they get to keep our money? If they are going to sell the land, I say don't pay the debt of the big spenders in Washington. Let them start managing the money they get to spend. Give us our money, or take our money from this sale and buy public land with it in places where recreationalists can use it.

Again, as Dr. Henning said, this sale may be a big farce to begin with because it is probably costing more than what we will get out of it if this thing does go through.

Now, trespass. As I said, we are getting more and more recreationalists. These people seem to have more and more time to go out and enjoy their activities and hobbies, but yet there is being more and more private land closed which puts more people with more time on less land and is causing greater conflicts with the ranchers.

I can understand the ranchers' problems. I grew

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up on a ranch. My dad had a dairy cow shot right in his barn, obviously not by a recreationalist, or not what I view as a recreationalist.

As far as I'm concerned, people who own land have absolute sayso over their land. If they own it, they own it. But we have enough public land in this state that if people are allowed access to public land, and as one of the ranchers stated, a lot of times the public is misinformed or doesn't know where public land is, well, I feel the BLM should have to post signs or print signs just like poster signs, like the "No Hunting" signs you see, only these signs should say, "BLM Land" or "National Forest Land," and these signs should be posted around the perimeters of the land so recreationalists know what is private land.

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Let's say it is decided that this has to be sold. We have talked about $100 an acre, fair market value, no value depending on whose point of view it is. How can we determine a value? That is one way. That is to sell it by auction. I don't think the rancher should have first choice. Why this land belongs to all of us. If we are going to sell it, let's do it right and auction it. That will determine a value. But keep in mind if you are going to bid on this land or if this land is going to be sold, these tracts that we are talking about, the vast majority of them are totally surrounded by private land. So if you

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know a couple years ago when this EIS study was put together the homeowners and the BCM was brought together at the BLM for their input and hopefully to work up a solution to solve the problem out there. And there were duties assigned to each party, and I understand the BLM kept a pretty accurate record as far as how each party carried through on their original agreement, and I don't think the homeowners group quite followed through like what was originally agreed to as far as fencing. I know from the access side the BMC did erect a fence and to this date the fence is still standing and has not been torn down.

One more comment. As far as the sheriff, it is also my understanding to file a complaint all you have to do is have a license number and be willing to testify that you actually saw the party in the vehicle. I could be wrong there. This is just what I have been told, to bring charges, and I don't know up to this date of anyone bringing a charge against a four-wheel drive vehicle out there that is destroying property.

And to the wildlife, I ride out there every Friday night and I think a Friday night has ever gone by that I haven't seen at least half a dozen deer out there. They have been there for a hundred years and we have been out there for fifty or sixty years, and everybody still seems to be getting along in pretty good harmony.

buy that land, and you are not the rancher that owns land around it, you are also going to have to buy access. Now, as far as I'm concerned, this is the edge that the ranchers should have and deserve. They won't have to, if they bid against another bidder, if I'm bidding on it, I have to also figure in, okay, I'm going to have to pay this rancher something to get access through. He has that much advantage over me in the bidding. And I feel he should have it, but I feel that's enough advantage. I don't feel he should be the sole purchaser, the sole person given the right to buy it.

67 cont.

Now, my last thought is I wonder how many people in this room, not counting BLM employees, are in favor of selling this land?

My other last thought is, and I'm not going to obviously ask them, I wonder how many of the BLM employees are actually in favor of selling it, because I'm sure they like to use recreational land too.

Thank you.

MR. STARK: Thank you, Mr. Field.

The next person to give testimony is Mr. Mark Lenhardt.

MR. LENHARDT: I just kind of want to make a couple of comments on the South Hills area. I'm here representing the Billings Motorcycle Club. Originally, I

And I guess my last comment I would like to compliment the BLM on recognizing a need for recreation on BLM ground, and hopefully designating an area for ORVs to have access to some area.

MR. STARK: Thank you, Mr. Lenhardt.

Mr. Lenhardt is our last person giving testimony. Is there anybody here that would like to give testimony that has not given testimony?

That being the case, I would like to remind everybody that our panel of experts and that number of Bureau of Land Management people who may be in this audience, after we break up, are here to answer questions you may have and hopefully try to answer some of them in a way to clarify some questions.

It is important to note that your written testimony will be received up until July 15th, if you want to -further amplify what you have already said. Again, it will be received and given the same consideration as that given tonight. I think it is important that you do give this testimony, either as you have tonight in an oral manner, or as written testimony.

I certainly appreciate everybody being here.

UNIDENTIFIED SPEAKER: If we do turn in written testimony, do we send it to the local office?

MR. STARK: Local office here. I think the

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address where to send it is right in the draft. There are copies of that in the back.

Are there any questions at all?

UNIDENTIFIED SPEAKER: What address, sir?

MR. BEAVER: 810 East Main, Billings.

MR. HENNING: One question. Is there going to be any attempt to have a regular public survey with a questionnaire that would supplemant particularly like on public land sales to really find out what the public is thinking beyond us here?

MR. STARK: Well, as you said, this is the first-- this is a formal hearing.

MR. HENNING: Are we going to have a survey of the people in the Billings and surrounding area, like a statistical survey, public opinion survey, so they really know what is happening?

MR. STARK: I doubt seriously that we have the funds to go into a census like going out and requiring a survey like for elections ard whatnot. You might want to discuss that after we close the meeting with the Area Manager, who is present.

Are there any other questions at all?

68 MR. TULLY: (Bob) How do you propose to justify and rationalize what has been decided now in the face of 180 degree different recommendation of ten years ago? You

68 cont. do not refer to it in this study as far as I can read. It has not been referred to. It is kind of bypassed. How do you intend to justify what is now proposed when something different was proposed ten years ago?

MR. STARK: You are Mr. Tully?

MR. TULLY: That's right.

MR. STARK: Mr. Tully, that is something you should discuss after this meeting. This is to give testimony as opposed to a question and answer period. It is a required method we do under the EIS system. There are other opportunities to have the discussion type thing with the personnel.

MR. TULLY: Will the answer be given publicly? Will everybody have an--

MR. STARK: It will be published with this very document.

With this, I think I will close the hearing. And I have twenty minutes after 8:00. Thank you all for coming.

[Whereupon, proceedings in the above matter were concluded.]

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Letters from Interested Public

1-1

BILLINGS RA

JUL 13 '83

BLM

United States Department of the Interior
NATIONAL PARK SERVICE
ROCKY MOUNTAIN REGIONAL OFFICE
655 Parfet Street
P.O. Box 25287
Denver, Colorado 80225

IN REPLY REFER TO
L7617 (RMR-PC)

JUL 8 1983

Memorandum

To: Project Manager, Billings Resource Area, Bureau of Land Management, Billings, Montana

From: Associate Regional Director, Planning and Resource Preservation, Rocky Mountain Region

Subject: Review of Draft Environmental Impact Statement and Resource Management Plan for Billings Resource Area, Montana (DES 83/17)

The National Park Service (NPS) has reviewed the subject document prepared by the Bureau of Land Management (BLM) and has the following comments, particularly concerning the proposal as it may affect the Bighorn Canyon National Recreation Area, National Natural Landmark sites, and the Yellowstone River.

69 We continue to have questions about the BLM policy of differing recommendations for wilderness or non-wilderness designations under different alternatives. The proposal for wilderness designation for all four wilderness study areas (WSA's) in the Billings Resource Area under the High Level Management Alternative is contradicted by the proposals for recommending non-wilderness designation for all or parts of the WSA's under the other alternatives. This again appears to be a strategy of tailoring recommendations for designation of WSA's around a particular management alternative, rather than determining the suitability or non-suitability of the WSA's and designing management strategies around them. We believe the latter to be a more prudent course of action which would more effectively determine which WSA's are suitable for wilderness designation.

70 In that same light, we must question the rationale behind the recommendation that the Big Horn Tack-On WSA not be designated as wilderness under the Preferred Level Management Alternative. Page 162 states that non-wilderness designation "would allow the development of other resources which could significantly impact visual resources over the long term." We would be interested in knowing what "other resources" this statement refers to, since page 145 mentions no mining claims for this WSA and indicates that "mineral potential is unknown and suspected to be low." Further, if there is a risk of significant visual impacts, which seems doubtful, we would prefer not to see such impacts introduced into an area where they would likely have adverse effects on both Bighorn Canyon National Recreation Area and the Pryor Mountain WSA.

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70 cont. We are also puzzled about the statement on page 131 that the Big Horn Tack-On WSA "contains wilderness values, but the location of portions of the unit near the Bighorn Canyon National Recreation Area reduces overall wilderness quality because of outside sights and sounds." Since the Bighorn Canyon National Recreation Area has been recommended for wilderness designation, as noted on page 98, we do not believe that "outside sights and sounds" would constitute a significant threat to the wilderness values of the Big Horn Tack-On WSA. As a matter of fact, we believe that without the Big Horn Tack-On WSA, the NPS wilderness proposal would be greatly diminished. Without the WSA, all that would remain would be a very narrow strip of land which by itself meets only the minimum requirements as a wilderness area. In this regard, since the Pryor Mountain WSA and most of the Burnt Timber Canyon WSA are recommended as suitable for wilderness under the Preferred Level Management Alternative, we fail to see the logic in separating them from each other or from the Big Horn Tack-On WSA. By considering these three WSA's as one, we believe that an excellent case can be made for recommending them as suitable for wilderness, thus creating a contiguous unit with the Bighorn Canyon National Recreation Area and the Lost Water Canyon WSA in Custer National Forest. Separation of the Big Horn Tack-On WSA and recommending against its designation as wilderness appears to us to create unnecessary administrative and management problems, especially in light of its configuration and location between two WSA's which are both recommended for wilderness designation.

71 Our second major concern is with the proposed wild horse surplusing processes. Page 6, section E, states that "anticipated budget allocations will not permit a continuous and timely excess program". Page 35, under the preferred alternatives section, mentions that the 121-head figure is viewed as a "median" figure to be maintained over the short term (8 years). Literally interpreted, this infers that the herd could be allowed to build to a size considerably in excess of the 121 head for a few years as long as it did not exceed 121 animals over an 8-year average. It is our opinion that allowing the Dryhead herd to exceed even the 31-head figure it currently supports for a few years would subject the already overused range to an unacceptable level of abuse. The accompanying reduction, in order to achieve the 121-head 8-year average, would have to be equally severe. In other words, we feel a yearly horse excessing program is essential. The horse range lands located within Bighorn Canyon National Recreation Area are subordinate to recreational needs, and range management must be intensive in order to maintain recreational values.

72 On page 24, under the low level management alternative, in the second paragraph under Wild Horse Management and Recommendations, you stated that 7,696 acres including the Sorenson extension would not be available for wild horse use. We believe that the 7,696 acre figure should be rewritten to include all NPS lands within the horse range. We suggest

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72 cont. rewording to state that under a policy of totally unregulated wild horse use, no NPS lands could be included because that use by its destructive nature would be contrary to our management mandates and could not be allowed.

73 Thirdly, in reference to oil and gas leasing, it appears that the horse range may not be adequately protected from leasable and locatable mineral development. Any related activity of this sort would seriously detract from the aesthetic properties essential in a horse sanctuary. NPS lands lying within the horse range are closed to mineral entry and disposition under the U.S. Mining Laws to include the mineral leasing acts. Page 37, under Land Tenure Adjustment, the Resource Objectives and Recommendations section, identifies 50 acres of land to be withdrawn from mineral leasing. No mention is made of National Natural Landmark areas such as the Bridger Fossil Area or the Crooked Creek Natural Area. Would these and other sensitive cultural sites receive protection from surface degradation linked to various forms of development and use? This does not appear to be the case from our review.

The following is a complete list of National Natural Landmark (NNL) sites within the Billings Resource Management Area.

Big Horn County (3)	Status
-Cloverly Formation Site	Designated (11/73)
-Devils Canyon and Karst Features of the Northern Big Horn Mountains (Montana and Wyoming)	Potential
-Crooked Creek Natural Area	Designated (7/68)

Carbon County (8)	Status
-Bridger Fossil Area	Designated (11/73)
-Big Ice Cave	Potential
-Crooked Creek Karst Canyon	Potential
-Foster Gulch Coal	Potential
-Granite Peak Glaciers (Park Stillwater)	Potential
-Pryor Mountain Limestone Cuestas	Potential
-Red Dome	Potential
-Red Valley, Southern Pryor Mountains	Potential

Stillwater County (1)	Status
-Granite Peak Glaciers (Carbon, Park)	Potential

Sweetgrass County (2)	Status
-Crazy Peak--Big Timber Creek	Potential
-Stillwater Ultramafic Complex	Potential

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4

74 Project planning and implementation of a selected alternative should consider these sites and avoid impacts which would adversely affect the ecological and geological features of these areas. Further information can be obtained from Ms. Carole Madison, National Park Service, Rocky Mountain Region, P.O. Box 25287, Denver, Colorado 80225 (phone: 303-234-6443).

75 A statement relating to air quality on page 53 is in error. Bighorn Canyon National Recreation Area is classified as a class II clean air area under the Prevention of Significant Deterioration (PSD) requirements of the Clean Air Act.

76 The subject draft should state that the Yellowstone River from the Yellowstone National Park boundary to Pompey's Pillar is a stream segment which is subject to Section 5(d) of the Wild and Scenic Rivers Act (P.L. 90-542). This factor should be considered in any Federal planning report which addresses a 5(d) river segment.

77 Finally, a very minor point, but your land status map shows a 160-acre parcel formerly the Ruth-Aldrich property as privately owned. This parcel was purchased by the NPS several years ago.

We thank you for the opportunity to review and comment on your plan. It is a comprehensive document and should serve as a useful guide for the future management of the natural resources under your care.

Richard A. Strait

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United States Department of the Interior
NATIONAL PARK SERVICE
BIGHORN CANYON NATIONAL RECREATION AREA
P O BOX 458
FORT SMITH MONTANA 59035

RECEIVED
BILLINGS RA
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ENV. ED ___ WLCLP ___
ADM ___ FILE ___ ACTION ___
PLAN ___ ___

IN REPLY REFER TO

A3815

May 27, 1983

Jerry Jack, Area Manager
Billings Resource Area
Bureau of Land Management
810 East Main
Billings, Montana 59105

Dear Jerry:

Having reviewed the Billings Resource Area Resource Management Plan, we find our comments focus primarily on the wild horse range management and wilderness issues.

78 We strongly recommend that you reconsider including the narrow strip of land bordering the NPS proposed wilderness known as the Big Horn Tack On in your wilderness recommendation. We feel that without the Big Horn Tack On our parcel's value is greatly diminished since all that would remain would be a very narrow strip of land which by itself meets only the minimum requirements as a wilderness area. The disjunct, northernmost part of the Big Horn Tack On which lies in sections 4, 5, 8, 9, and 10 of R95W, T8S, is not of as much concern to us. We feel that the wilderness area will be greatly enhanced as a unit if all BLM, USFS, and NPS proposals are kept intact.

79 Our second major concern is with your wild horse surplusing procedure. On page 6, section E, you state that "anticipated budget allocations will not permit a continuous and timely excess program". Then on page 35, under the preferred alternatives section, you mention that the 121 head figure is viewed as a "median" figure to be maintained over the short term (8 years). Literally interpretated, this infers that the herd could be allowed to build to a size considerably in excess of the 121 head for a few years as long as it did not exceed 121 animals over an 8-year average. It is our opinion that allowing the Dryhead herd to exceed even the 31 head figure it currently supports for a few years would subject the already overused range to an unacceptable level of abuse. The accompanying reduction, in order to achieve the 121 head 8-year average, would have to be equally severe. In other words, we feel a yearly horse excessing program is essential. The horse range lands located within Bighorn Canyon NRA are subordinate to recreational needs and range management must be intensive in order to maintain recreational values.

Year of the Visitor

3-1

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Ecological Services
Federal Building, Room 3035
316 North 26th Street
Billings, Montana 59101-1396

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RES. T ___ LANDS ___
ENV. ED ___ WLCLP ___
ADM ___ FILE ___ ACTION ___
PLAN ___ ___

IN REPLY REFER TO:

ES

July 18, 1983

MEMORANDUM

TO: Billings RMP Project Manager, Bureau of Land Management, Billings Resource Area

FROM: Field Supervisor, USFWS, Billings, MT (ES)

SUBJECT: Review of Billings Resource Area RMP Draft Environmental Impact Statement

We have reviewed the subject statement and the following constitute the comments of the U.S. Fish nand Wildlife Service (FWS).

Endangered Species

We have examined the Billings Resource Area RMP for compliance with the Endangered Species Act (ESA), as amended, and have the following comments about the plan.

First, the list of endangered or threatened species discussed in the plan is accurate and the plants mentioned (pg. 71) as "under review for listing" are also correct.

85 The ESA requires that "all Federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to Section 4 of this Act (Section 7(a)(1))." The plan does not directly present a discussion of opportunities available to the BLM to enhance the survival or recovery of endangered species through positive programs aimed at these objectives.

2-2

2

80 On page 24, under the low level management alternative, in the second paragraph under Wild Horse Management and Recommendations, you stated that 7,696 acres including the Foreman extension would not be available for wild horse use. We believe that the 7,696 acre figure should be rewritten to include all NPS lands within the horse range. We suggest rewording to state that under a policy of totally unregulated wild horse use, no NPS lands could be included because that use by it's destructive nature would be contrary to our management mandates and could not be allowed.

81 Thirdly, in reference to oil and gas leasing, it appears that the horse range may not be adequately protected from leasable and locatable mineral development. Any related activity of this sort would seriously detract from the aesthetic properties essential in a horse sanctuary. National Park Service lands lying within the horse range are closed to mineral entry and disposition under the U.S. Mining Laws to include the mineral leasing acts. On page 37, under Land Tenure Adjustment, the Resource Objectives and Recommendations section, you identify 50 acres of land to

82 be withdrawn from mineral leasing. No mention is made of National Natural Landmark areas such as the Bridger Fossil Area or the Crooked Creek Natural Area. Would these and other sensitive cultural sites receive protection from surface degradation linked to various forms of development and use? This does not appear to be the case from our review.

83 A statement relating to air quality on page 53 is in error. Bighorn Canyon NRA is classified as a class II clean air area under the Prevention of Significant Deterioration (PSD) requirements of the Clean Air Act.

84 Finally, a very minor point, but your land status map shows a 160 acre parcel formerly the Ruth-Aldrich property as privately owned. This parcel was purchased by the NPS several years ago.

We thank you for the opportunity to review and comment on your plan. It is a comprehensive document and should serve as a useful guide for the future management of the natural resources under your care.

Sincerely,

William G. Binnewies
William G. Binnewies
Superintendent

3-2

85 cont. We recommend that an effort be made during the Section 7 consultation process at establishing long-term goals for E/T species and their recovery, and identification or documentation of known important and manageable E/T habitats. With this base, the biological assessment can be structured to examine alternatives and their impacts (direct, indirect, and cumulative). The final step needed is the identification and use of various criteria which will be followed in resource use prescriptions to evaluate case-by-case or area-wide development actions in the future. We recommend that the BLM incorporate this information into the RMP/FEIS. By establishing these procedures and criteria now, we can all be certain that the RMP/DEIS is not likely to affect E/T species over the long-term. Moreover, funding and manpower resources can be identified in advance of development so that EAR's and other site review processes can be adequately accomplished.

86 For instance, we agree with attempts to provide greater recreational access to the Yellowstone River via land acquisition or exchange under the FLPMA and/or "Asset Management Program." We are interested in (an so might the public be) how this and improved range condition in woody floodplain zones may affect (positively or negatively) the endangered bald eagle which is known to use this resource area during breeding, wintering, and migration periods, or the endangered peregrine falcon that migrates through the area and was known to breed in the Billings Resource Area in the past.

87 We note methods for monitoring for listed species are presented (Appendix 4.4) and monitoring for black-footed ferrets is discussed in the Alternatives Section. We realize that Instruction Memorandum No. MT-81-163-Change 1, states that areas will be managed for ferrets depending upon funding and manpower availability. We feel that the RMP, as a public document, is a suitable place to present, in a specific section on listed species, a brief discussion of these policies and the BLM's proposed efforts to identify, protect, or enhance habitat for listed species. Also, we believe that specific goals of this long term planning and resource allocation tool should include projections for listed species recovery.

88 Finally, we recommend your continued efforts to consult with the Fish & Wildlife Service on RMP's as directed by ESA [Section 7(a)(2)]. Through this exercise, the BLM will:

1) develop a biological assessment of the impacts of various proposed actions and their effects on listed species, and be able to use the assessment in the decision making process (Record of Decision);

2) be able to document actions which were consciously considered and evaluated to enhance and protect habitat for listed species;

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88 cont.

3) be able to make the public more aware of the BLM's responsibilities mandated under ESA;

4) benefit from public suppurt of those actions proposed in the RMP which are designed to meet the mandates of ESA.

If we can be of assistance to you in interpreting or discussing our comments on this plan, please don't hesitate to contact Mr. Wayne Brewster, Field Supervisor for Endangered Species in Montana at (406) 657-6059.

Wildlife Unsuitability Criteria

89 We have reviewed the application of the unsuitability criteria on the federal mineral estates within the Billings Resource Area. We believe that the rationale used in the draft document for application of the wildlife unsuitability criteria are not consistent with regulations pertaining to the management of federally owned coal (43 CFR 3400) and may result in unnecessary conflict or delays if leasing of these coal reserves is initiated in the future.

In general, we have found during past leasing efforts in the Powder River and Fort Union Coal Regions, that completion of four-six season wildlife inventories and application of unsuitability criteria well in advance of coal leasing activities minimizes the conflict between wildlife and coal development initiatives. Section 3461.3-1(a)(1) of the Federal Coal Management regulations state that, "Each of the unsuitability criteria shall be applied to all coal lands with development potential identified in the comprehensive land use plan or land use analysis. For areas where one or more unsuitability conditions are found and for which the authorized officer of the surface management agency could otherwise regard coal mining as a likely use, the exceptions and exemptions for each criterion may be applied."

Section 3461.3-1(b)(1) requires that, "The comprehensive land use plan or land use analysis shall include an indication of the adequacy and reliability of the data involved. Where either a criterion or exception (when under subsection (a) of this section the authorized officer decides that application of an exception is appropriate) cannot be applied during the land use planning process because of inadequate or unreliable data, the plan or analysis shall discuss the reasons therefor and disclose when activity planning, or, in the case of Criterion 19, prior to approval of a permit, the data needed to make an assessment with reasonable certainty would be generated".

Section 3461.3-1(2) states that..."No lease tract shall be analyzed in a final regional lease sale environmental impact statement prepared under Section 3420.4-5 of this title without significant data material to the application to the tract of each criterion described in Section 3461.1 of this title, except, where necessary, Criterion 19".

3-4

Section 3461.4-1(b) further emphasizes that..."The unsuitability criteria shall be initially applied either:

(1) During land use planning or the environmental assessment conducted for a specific lease application; or

(2) During land use planning under the provisions of Section 3420.1-4 of this title".

In summary, the regulations require that the unsuitability applications be based on adequate data and that they be completed prior to leasing of the federal coal.

90 Our analysis of the subject document did not identify whether or not adequate wildlife data for the coal field exists. Our understanding is that adequate data is not now available, but that on-going inventories are being completed and other inventories have been scheduled. We believe the document should discuss the status of the application of unsuitability criteria #9-15, including the adequacy of existing data and how future unsuitability applications will be conducted. We strongly encourage the Bureau to complete wildlife inventories and any necessary unsuitability applications well in advance of anticipated leasing activities. In this regard, we believe that the management recommendation to delay unsuitability criteria applications on areas that will be mined by underground methods until a site-specific mine plan is filed should be revised. Development of mine plans are expensive and time-consuming endeavors. To delay identifying to industry conflicts with planned surface facilities and wildlife until this stage will result in unnecessary conflicts between coal resource development and wildlife. Assembling adequate wildlife inventory data and application of unsuitability criteria should be completed as soon as industry expresses interest in an area and before any federal leases are issued.

Range Resources

91 Under the preferred management alternative, it is proposed to renovate 1700 acres of blue gramma-fringed sagewort dominated range and to improve 5,188 acres of existing crested wheatgrass pasture. We are very concerned with the trend toward development of crested wheatgrass pastures on public rangeland. This type of conversion results in monotypic vegetation, essentially useless to wildlife. Even if other species such as alfalfa or sweetclover are included in the mixture, they are generally eliminated over time due to the competitive nature of crested wheatgrass and the high livestock utilization rates typically used to maintain the "pasture" in palatable condition. We feel that these conversions (to crested wheatgrass) should not be undertaken on public lands that are managed for multiple use. If undertaken at all, they should be developed on private lands included in an RMP in order to defer use on the native public range until mid-June or early July. Thus, the livestock operator would still have the necessary spring grazing and the native public range would be maintained. We feel this is critically important because

3-5

91 cont. of the negative wildlife implications resulting from the loss of native range in Montana due to "plow-out" in recent years. In the case of the 1700 acres that are to be renovated, we recommend that this acreage be seeded to native range grasses and forbs; for the 5,188 acres of existing crested wheatgrass pastures, we recommend that instead of improving them, that native grasses and forbs be reestablished in these areas.

92 We are also very concerned about the proposal to burn 21,520 acres of sagebrush. According to the draft, (p. 149) 18 percent of the federally-managed antelope winter range would be destroyed. In addition, 28 Sage grouse leks (25 percent of the known leks) and adjacent associated wintering and nesting areas could be affected. This appears to us to be an unacceptable risk to these wildlife species. In this matter, we are somewhat confused as to whether the guidelines outlined in Appendix 4.1 (page A-60) for sagebrush burning are to be followed. The guidance states that burning would be prescribed on areas where sagebrush canopy cover exceeds 40 percent. However, the main body of the draft states (p. 117 and elsewhere) that "Prescribed burning of dense (25 percent canopy) big sagebrush will greatly reduce canopy of sagebrush." If only areas exceeding 40 percent canopy coverage are burned, would the total acreage treated be substantially less than 21,000 acres?

Because there seems to be significant wildlife impacts that could result from burning this sagebrush, we feel the activity should only be undertaken after a detailed Habitat Management Plan and Environmental Analysis is developed for the area to be burned. The main reason for the proposed treatment is to provide additional forage for livestock, but there is sufficient reason to believe that if the burn is conducted after meaningful wildlife studies have been completed, potential impacts to wildlife could be reduced substantially. Of course the studies might show that the impacts could not be mitigated and if so we would recommend that the sagebrush burning be forgone.

Riparian Habitat

As you know, the BLM, at the national level, has recognized the importance of riparian-wetland habitat, and special emphasis has been given to the protection and enhancement of these areas, in terms of general policy. On February 5, 1980, the BLM published in the Federal Register (Volume 45, No. 25, pages 7889-7895), Final Guidelines; Wetlands-Riparian Area Protection and Management; Policy and Protection Procedures. Therein it is stated that, "Riparian areas which presently or potentially support broad-leaf vegetation in arid and semi-arid ecosystems are of special management concern" (emphasis added). One of the stated objectives is to, "implement a management system to protect, maintain, and enhance all wetland-riparian areas administered by BLM" (emphasis added). The guidelines further state that BLM policy will be to, "Avoid the long and short-term adverse impacts associated with the distribution, loss, or degradation of wetland-riparian areas"...and, "Preserve and enhance the natural and beneficial values of wetland-riparian areas which may include constraining or excluding those uses that cause significant, long-term ecological damage."

3-6

93 Having reviewed the Billings RMP DEIS, we were unable to determine: 1) how much woody floodplain zone exists in the Resource Area; 2) what the existing condition is of the 41 miles of woody floodplain zone in the "I" category allotments, nor 3) whether there are any wetlands in the Resource Area. Although the draft states (p. 47) that, "Ecological condition on 80% of 41 miles of woody floodplain zone would improve or be maintained at good and excellent condition" we have no way of determining what the relevance of your commitment is. For example, if 80% is already in good or excellent condition, then in essence nothing would be done to improve existing habitat in fair or poor condition. If additional woody floodplain zones exist in the Resource Area in the "M" and "C" categories, we feel that an appropriate goal for these areas would also be to attain 80% or more in good to excellent condition. Similar commitments should be made for protecting wetland habitats.

94 During preparation of the Final EIS, we feel more attention should be given to wetland-riparian needs, especially regarding the time over which protective measures are to be implemented. Inasmuch as it could take 25 years to attain your proposed goals and these habitats are so important to wildlife, some additional measures seem warranted in the interim. For example, 25% of the existing woody floodplains could be fenced over the short-term (8 years) to insure that some of these areas improve quickly. This is especially important because the responses of woody habitat to intensive grazing management are not yet fully known. It is possible that even with close monitoring, the desired goals could not be reached with grazing management alone.

Land Tenure

95 On the issue of land tenure adjustments, we would like to request that you implement a goal of utilizing exchanges as the primary means of disposal rather than sales. Outright sales of public lands could have severe consequences upon the wildlife values thereon and the public's use thereof. It is especially important in the Billings Resource Area to maintain as much land in public ownership as possible to provide areas for recreation for the large and growing population in this region of Montana. Furthermore, we encourage you to pursure, on a priority basis, providing access to these public lands where such access does not now exist.

Livestock Grazing

96 On the issue of grazing, we found almost no details in the draft of how grazing will be managed for the benefit of wildlife. The inference made is that bettering the range condition will increase wildlife benefits. Although we too believe that wildlife can benefit from bettering the range condition, we feel that other issues must also be considered to determine whether wildlife resources will receive any net benefits. Often times the range improvements (water, fencing, grazing systems) associated with intensive management have substantial negative impacts. For example, one ramification of intensive management is the intrusion of livestock into areas that previously were not utilized because of

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96 cont. lack of water. After water developments are installed, livestock/wildlife competition will be spread over a broader area than was previously possible. Another impact is the often intensive utilization of forage in one or more of the pastures in a grazing system which leaves little or no residual cover for wildlife in these pastures. We feel these, as well as other pertinent issues, must be discussed in the final EIS before the assertion can be made that the proposed grazing management will benefit wildlife. As written, the draft does not discuss the negative implications of intensive grazing management on wildlife resources.

97 We feel that your goal to attain 80% of the range in the "I" category allotments in good or excellent condition is reasonable. However, we do feel that the "M" and "C" category allotments are being slighted; we realize that your resources are limited, but feel that something should be initiated to remedy the 67,866 acres (see Table 2.6) that will remain in fair or poor condition (exclusive of the Prior Mountain Wild Horse Range) in these category allotments, even if it is quite long range, say 50 years. Given this amount of time, a reduction of AUM's on these areas could improve the range condition without a large investment of time or large amounts of money in range improvements.

98 Regarding the long-term increase in forage (10,711 AUM's) that is estimated to occur as a result of improvement in range condition, we request that not all of these be allocated to livestock as is stated in the draft (see page 30). Instead, a more equitable arrangement would be to allocate 50% of the increase to livestock and 50% to wildlife.

Sincerely,

John B. Weed
Field Supervisor
Ecological Services

cc: District Manager, BLM, Lewistown, MT
State Director, BLM, Billings, MT
Robert Stewart, Department of the Interior, Denver, CO
Environmental Coordination, Washington D.C.
Regional Director, USFWS, Denver, CO

-7-

42

102 4. Perhaps the second column in the gas production tabulation near the bottom of Table 3.1 should be labeled "cumulative" rather than 1981.

103 5. There are numerous references in the text on alternatives and in Chapter 3 on affected Environment that mention the Bull Mountain Coal field and two operating mines but this field is not one of the coal fields shown on maps pages 59 to 62. None of these statements suggest location of this field can be found on map 1 in the pocket at the back of the report. Also, these maps don't specifically identify these 2 small operating mines. Changes are needed to make it easier for the reader to follow the text. For example, in paragraph 1 of page 58, it would help to add the coal field name; in the fourth paragraph page 58 give coal beds and coal field of both small mines; adding section, township and range for each mine would also help; identifying coal bed and coal field in paragraph 6 concerning Consolidation Coal would help; adding section, township and range for the test pit might help the reader; etc.

The above comments are offered as technical assistance; a formal review, if desired, must be requested through Washington D.C. headquarters.

Mr. D'Arcy P. Banister, Supervisor
Mineral Involvement Section

41

United States Department of the Interior
BUREAU OF MINES
WESTERN FIELD OPERATIONS CENTER
EAST 360 3RD AVENUE
SPOKANE, WASHINGTON 99202

JUN 30 '83

June 24, 1983

Memorandum

To: Michael J. Penfold, State Director, Bureau of Land Management

From: D'Arcy P. Banister, Section of Mineral Involvement, U.S. Bureau of Mines, Western Field Operations Center

Subject: Review of Draft Environmental Impact Statement (DEIS) on the Resource Management Plan for the Billings Resource Area.

The DEIS appears to be a good, comprehensive evaluation of the mineral resources and the effects of the management alternatives on those resources in the Billings Resource Area.

We have noted a few minor problems or questions that should be brought to the attention of the authors.

99 1. The explanation with Figure 3.3 is the reverse of that on Figures 3.2, 3.4, and 3.5 as pertains to Federal Coal and Federal Subsurface Coal.

100 2. Should we assume the potential coal with a cutoff ratio of 20:1 on Figure 3.5 lies between the "High to moderate potential line" and the outcrop? A brief statement would clarify this question and remove the doubt.

101 3. What coal field is being discussed in paragraph 2 of page 63? The first and third paragraphs are about the Bear Creek Field, which is near the town of Red Lodge. Paragraph 3 infers paragraph 2 is discussing the Red Lodge Field.

5

DEPARTMENT OF THE ARMY
OMAHA DISTRICT CORPS OF ENGINEERS
6014 U S POST OFFICE AND COURTHOUSE
OMAHA NEBRASKA 68102

REPLY TO ATTENTION OF
Planning Division

May 5, 1983

RECEIVED
MAY 11 1983

Mr. Glenn W. Freeman
District Manager
Lewistown District Office
Bureau of Land Management
Airport Road
Lewistown, Montana 59457

Dear Mr. Freeman:

We have reviewed your Draft Environmental Impact Statement, Resource Management Plan for the Billings Resource Area.

The report appears to be a well prepared, informative, and easy-to-read document. We have no comments to offer at this time. Thank you for allowing us the opportunity to review this document.

Sincerely,

Richard D. Gorton, Chief
Environmental Analysis Branch
Planning Division

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6

United States Department of the Interior

BUREAU OF RECLAMATION
Upper Missouri Region
P.O. Box 2553
Billings, Montana 59103

IN REPLY REFER TO: UM-150

MAY 13 1983

Memorandum

To: State Director, Bureau of Land Management, Billings, Montana

From: Regional Environmental Affairs Officer, Bureau of Reclamation, Billings, Montana

Subject: Draft Environmental Impact Statement - Resource Management Plan - Billings Resource Area (DES 83-17)

Our review of the subject draft EIS indicates that the proposed resource management plan would have no effect on proposed or operating Reclamation projects. We have no further comments.

Thank you for the opportunity to review the draft impact statement.

cc: Commissioner, Attention: 150

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
1860 LINCOLN STREET
DENVER, COLORADO 80295

DEPT. OF INTERIOR
BUR. OF LAND MANAGEMENT
1983 AUG -1 AM 11:00

JUL 27 1983

MONTANA STATE OFFICE
BILLINGS, MONTANA

Ref: 8MO

Mr. Michael J. Penfold
State Director
Bureau of Land Management
222 North 32nd Street
P.O. Box 30157
Billings, Montana 59107

Dear Mr. Penfold:

We have completed our review of your agency's draft environmental impact statement entitled "Resource Management Plan - Billings Resource Area." The draft EIS adequately addresses the environmental aspects of your proposed management plan over which EPA has authority. We support your watershed management proposal and believe it should help improve water quality in the study area.

According to EPA's rating system for draft impact statements, this EIS is rated LO-1 (lack of objections - sufficient information). If you have any questions, please contact Mr. Gene Taylor in our Montana Office, Helena, at FTS 585-5486.

Sincerely yours,

John G. Welles
Regional Administrator

7

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VA 22092

In Reply Refer To:
EGS-Mail Stop 423

JUL 23 1983

Memorandum

To: Billings Resource Area Project Manager, Bureau of Land Management Billings, Montana

From: Assistant Director for Engineering Geology

Subject: Review of draft environmental statement for resource management plan, Billings Resource Area, Montana

We have reviewed the draft statement as requested in the State Director's notice.

We have given only the most cursory review to the minerals data included in this report because the U.S. Geological Survey will prepare a comprehensive, detailed, joint report with the Bureau of Mines on the mineral resource potential of those areas recommended as suitable for wilderness, in accordance with Section 603 of FLPMA.

We have no other comment.

James F. Devine

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DEPT. OF INTERIOR
BUR. OF LAND MANAGEMENT

State of Montana
Office of the Governor
Helena, Montana 59620

1983 JUL 21 PM 2 04

TED SCHWINDEN
GOVERNOR

July 15, 1983

Mr. Michael Penfold, State Director
U.S. Bureau of Land Management
P.O. Box 30157
Billings, MT 59107

Dear Mr. Penfold:

On behalf of the State of Montana and the State Planning Task Force members, I would like to thank you for the opportunity to comment on the Draft Billings Resource Area Management Plan (RMP).

The State of Montana appreciates the fact that in the process of developing the Billings RMP it was necessary for the BLM to address an exceptionally large, diverse portion of Montana. Acknowledging that fact, the RMP still appears to be vague in the data used for the alternatives and methodology sections. The format used in the RMP was confusing and involved a considerable amount of searching and sorting to understand the management directives.

Attached are specific comments and concerns particularly important to Montana. We continue to support BLM's efforts to consolidate land holdings through exchanges and sales, when the process would result in a positive benefit to the public.

I look forward to reviewing the final RMP and continuing our on-going land exchange process.

Sincerely,

TED SCHWINDEN
Governor

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cc: Planning Task Force Members

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SPECIFIC CONCERNS

A. AIR QUALITY

104 1) On page 53, paragraph 5 under Air Quality of the RMP, the paragraph is incorrect. Neither portions of the Absaroka-Beartooth "wilderness area" nor the Bighorn National Recreation Area have Class I air quality designations. The only area to have a Class I rating is Yellowstone National Park.

105 2) No mention is made of the impacts associated with prescribed burning. According to the Plan, 21,520 acres of sagebrush are programmed for burning, but no mitigation measures are mentioned regarding the resulting smoke. Reference should be made to the Montana Cooperative Smoke Management Agreement and Plan.

B. WATER

106 1) Due to the climatic and land characteristics of the areas managed by the BLM in the Billings Resource Area, minimal impacts to water quality are expected under the preferred management alternatives. Best management practices (BMP) should be used to maintain streamside vegetation, stockwater access, bank trails and any other natural conditions along streambanks, in addition to the maintaining of water quality.

107 2) The High-Level and Preferred Management Alternatives state that water quality in riparian zones should improve. The effectivenss of sediment control and some water chemistry parameters will require monitoring.

108 3) Grazing management, and coal mining are potential areas of concern for water quality impacts. With proper mitigation and management practices, reduction of impacts to water quality can be made. Grazing allotment management should include measures for streambank protection. Mitigating measures to reduce the impacts of coal mining and its associated activities must considered and implementad as federal reserves are leased and mined.

C. GRAZING

109 1) The emphasis on grazing system implementation, range and tame pasture rennovation and the reduction of stocking rates to achieve proper use should be effective in range and watershed improvements.

110 2) Detailed sagebrush burning techniques should be given in the allotment management plans and Appendix 4.1 of the RMP. Reseeding may be necessary following prescribed fire in stands severely depleted of perennial grasses.

3) It is not clear on pages 30 and A-60 of the RMP if rennovated crested wheatgrass pastures will be fenced. Fencing of crested wheatgrass pastures into separate units is usually required for effective pasture management.

-1-

93

111 4) Monitoring of range conditions, trends, and utilizations will be very important in the Billings Resource Area due to the limited data and time inputs available for the RMP. Monitoring techniques should be described in more detail in the RMP, even though they will be described in each Allotment Management Plan. An appendix could be included listing the specific data gathering techniques to be used for each allotment category, including the frequency of the monitoring effort.

112 5) The "sodbusting" practices that are going on in Montana could jeopardize BLM's asset management program. The State strongly supports the exchange of lands instead of sale for isolated tracts; where there is potential irrigable lands; and in areas that make good land management sense. The sale of isolated tracts should only be considered when such a sale would be of public benefit. Since these lands are, for the most part, rangeland the State wishes to express its concerns that these lands not be broken up unless they are classified as tillable land by the Soil Conservation Service. The State suggests that a "statement of intent" and a soil conservation plan accompany any person's or company's offer to buy or exchange BLM land.

D. NOXIOUS WEEDS

The emphasis on cooperative efforts with private landowners and county weed boards is appreciated. The BLM acknowledges a need for an accurate inventory of infested acres and should commit to such an inventory.

E. WILD HORSE MANAGEMENT

1) The State supports BLM's efforts to consolidate their land holdings within the Pryor Mountain Wild Horse Range (PMWHR) to facilitate management of the area. The Department of State Lands has listed for exchange the State Trust Lands within the Wild Horse Range in the Billings Resource Area.

113 2) Short of forced movement of the horses and cross-fencing, the State believes that the BLM should take more positive measures than those outlined in the preferred alternative to improve the range condition on the PMWHR. Some of the other range improvements outlined in the high level management alternative would seem to be appropriate for further consideration.

114 3) Installing several water catchments would further aid in the distribution of the horses and help reduce the erosion associated with long treks to water sources. Interseeding and some forms of vegetative manipulation, such as sagebrush burning, should also be considered.

115 4) The State supports a vigorous monitoring program be associated with any management changes on the PMWHR. Manipulating the sex ratio of the herds should be phased in over time and closely monitored.

116 5) Removal of the Classification and Multiple Use classification from the majority of PMWHR lands has the potential to dramatically affect the horses. The BLM should study the possibility of extending the preferred alternative oil and gas leasing philosophy to mineral exploration.

-2-

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F. FIRE CONTROL

117 The current program needs to be explained in greater detail, considering the scattered nature of their lands. The BLM policy regarding cooperation with the Department of State Lands should be explained. Recognition should be given to the counties participating in the County Cooperative Fire Program. The planned fire prevention, presuppression, detection, and suppression coordination should be explained.

G. OIL AND GAS LEASING

118 The discussion on page 7 of the RMP is unclear. First, the statement is made that: "The activities associated with oil and gas exploration and production may impact scenic values, wildlife habitat, cultural resources and other land uses." Later, the statement is made that: "In most cases, these stipulations (standards) provide adequate protection for other environmental components." It appears that potential impacts are recognized, but it is not clear if the BLM intends to fully provide the necessary environmental protection. Adequate environmental protection should be ensured in more than "most cases" terminology.

H. LAND TENURE ADJUSTMENT

119 The State strongly supports the emphasis on land exchanges, as opposed to sale, in the Billings Area RMP. South-central Montana has the lowest percentage of public lands of any area in the state. Yet, it has the largest and fastest growing population of any region.

120 The Land Tenure Adjustment Planning Criteria presented in Appendix 1.3 (page A-4) do not seem to conform to the criteria included in the State Director's Guidance Manual. In particular, size is not a criterion in the Director's Guidance, but seem to have some importance in Appendix 1.3. Number 13 under "Disposal Criteria" seems to indicate that BLM intends to accommodate sodbusting where interest is expressed in a parcel of public land. This is contrary to the Governor's stated position on this issue.

121 In a related matter, we recently received a request to comment on the sale of a parcel of land which is part of the Pryor Mountain Wild Horse Management Area. This is contrary to the State Director's Guidance Manual, but does not seem to be addressed by the "Retention Criteria" in Appendix 1.3. These discrepancies should be cleared up.

I. COAL LEASING

122 The State has some concerns about the leasing of coal reserves in the Bull Mountains, at this time. The nature and cost of the extractive operation involved are of dubious feasibility in current coal market conditions. The DEIS also fails to present, for public comment, the results of the application of all the unsuitability criteria. We recommend that before any coal leasing occurs in the Bull Mountains a separate EIS be prepared that addresses in-depth these and other concerns of the public.

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J. WILDLIFE

123 1) Key wildlife-use areas must be included as an integral part of the grazing plan. Special emphais should be placed on quantified range improvement objectives and how it is to be attained within the grazing plan. The State recommends that a portion of the increase in predicted forage as a result of improved range conditions be allocated to key wildlife ranges.

124 2) The State disagrees with the statement, "additional livestock water sources would expand wildlife habitat significantly on the "1" category allotments." Prior to adding water sources a complete evaluation should be made of the potential conflicts with wildlife that may result from the change in livestock distribution.

125 3) The development of nesting islands can be of considerable benefit to waterfowl and should be included in all new reservoir construction. Fencing reservoirs from cattle use to produce nesting cover can also be of benefit, but only if a large enough area (130-160 acres) of cover is provided. Research by the Montana Department of Fish, Wildlife and Parks has determined that on waterfowl production areas small patches of nesting cover serve as an attractant to waterfowl, but ultimately form a trap as they are easily searched by predators.

126 4) Although available nesting cover for upland game birds can increase due to decreased off-road vehicle use, the benefits would be reduced since vehicles would still have access to the area on designated roads and trails. The acreage impacted would thus be considerably less than the 57,900 acres predicted in the EIS.

127 5) Habitat management plans should not be limited to chukars, but should be prepared and implemented for all wildlife species. The uniqueness of this bird to Montana hunters and its dependence on public lands is a good reason for developing a managment plan. However, the needs of the other game and nongame species also need to be considered. For example, Over the past seven years for which comparable data are available, chukar hunters have averaged 823 hunter days and 895 chukars killed per day. This compares with a combined average of 122,000 hunter days for upland bird, antelope and deer hunters in the same area. This hunter use dictates habitat management plans should also be developed for other species.

128 6) The State disagrees with the statements, "There would be a moderate decrease in chukar partridge and sage grouse habitat due to the burning of 21,520 acres of sagebrush. However, this would result in a moderate increase of sharp-tailed grouse habitat." The removal of sagebrush will result in a decrease in sage grouse, but it does not guarantee the appearance of sharptails or their habitat.

129 7) Sagebrush removal on 21,520 acres (18 percent of federally managed antelope winter range) will have a significant negative impact on antelope. Sagebrush is the dominant forage species in antelope diets often constituting 80-90 percent of the total winter diet. In addition, research has found browse occurrence in the antelope diet to be 15 times greater than its occurrence in the plant community and substantial starvation losses of antelope have been documented when they are restricted to grassland types.

130 8) Sagebrush burning would also have a negative impact on sage grouse. Since the sage grouse strutting ground is considered the hub of sage grouse

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96 cont.

130 activity, the effect of sagebrush burning would be even greater than the 25 percent indicated because of the associated wintering and nesting areas that would be affected.

131 The State recommends those areas for which sagebrush burning is proposed be identified in the Plan. In addition, the BLM should coordinate these and future sagebrush burning proposals with the Montana Department of Fish, Wildlife and Parks with the intent to meet the following guidelines: leave a ratio of 40:60 (40 percent sagebrush, 60 percent open); no burning on critical sage grouse or antelope wintering areas; burns in small irregular patches 50x100 yards in size; no burning within identified sage grouse nesting, wintering and strutting ground complexes; burning should occur in early spring before nesting.

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Natural Resources Defense Council, Inc.

Public Lands Institute
1720 RACE STREET
DENVER, COLORADO 80206
303 377-9740

RECEIVED
BILLINGS RA
JUL 20 '83

July 15, 1983

Mr. Gary Leppert, Project Manager
Billings Resource Area Office
Bureau of Land Management
810 East Main
Billings, Montana 59107

Re: Draft Environmental Impact Statement and Resource Management Plan for the Billings Resource Area, Montana

Dear Mr. Leppert:

Enclosed are the comments of the Natural Resources Defense Council and its Public Lands Institute on the Draft Environmental Impact Statement and Resource Management Plan for the Billings Resource Area.

We appreciate the opportunity to review and comment on this proposal. If I can be of assistance to the project team, please do not hesitate to contact me at the above address and telephone.

Sincerely yours,

Carolyn R. Johnson
Senior Public Lands Specialist

CRJ:km

Enclosure

10

DEPT. OF INTERIOR
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JUL 19 '83

July 11, 1983

Mr. John A. Kwiatkowski
Bureau of Land Management
222 North 32nd Street
P.O. Box 30157
Billings, MT 59107

Dear Mr. Kwiatkowski:

The draft Resource Management Plan for the Billings Resource Area has been circulated for review by several state agencies. Copies of agency comments are enclosed for your consideration and use.

132 Our review was restricted to those management proposals affecting the 6,340 acres of public lands in the Pryor Mountain Wild Horse Range (PMWHR) in Big Horn County, Wyoming. We note that the preferred alternative recommends wilderness designation of the entire PMWHR. We further note that present management of the wild horse range is in keeping with preservation of wilderness values. If the area were to be designated wilderness, we believe that sufficient flexibility should be incorporated in the designation to allow for needed range improvements and wild horse management activities. We also encourage the Bureau to work closely with the local publics and communities to address access, interpretation and recreation/toursim desires.

Thank you for the opportunity to review and comment on this document. Please keep my office informed of the progress in this effort.

Sincerely,

Dick Hartman
State Planning Coordinator

DH:pcl

Enclosures

11-2

Natural Resources Defense Council, Inc.

Public Lands Institute
1720 RACE STREET
DENVER, COLORADO 80206
303 377-9740

COMMENTS OF THE

NATURAL RESOURCES DEFENSE COUNCIL, INC.
AND ITS PUBLIC LANDS INSTITUTE

ON THE

DRAFT ENVIRONMENTAL IMPACT STATEMENT

AND RESOURCE MANAGEMENT PLAN FOR

THE BILLINGS RESOURCE AREA, MONTANA

Prepared by:

Carolyn R. Johnson
Senior Public Lands Specialist

Eric Hildebrandt
Intern, Policy Analysis

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The Alternatives

133 The RMP/EIS alternatives fail to include or shortchange management actions and impact analysis for several important concerns, largely because BLM has failed to inventory much of the lands it manages. For example, Chapter one notes that "there is currently a state and federal effort under way to identify utility and transportation corridors" in the resource area, but dismisses further development of these issues in the planning process because they are "not items of major concern or sufficient data for analysis purposes simply do not exist" (p. 3). Utility corridor and transportation planning are basic issues which should be addressed throughout the planning process -- gathering additional information, if necessary -- in order to develop a comprehensive, integrated

134 management plan for the area. Similarly, the recreation and visual resource management programs in all the alternatives are not well developed, with the only clearly stated objective being to acquire access into seven areas with high recreational potential (p. 37).

135 In several cases, BLM appears to have access to significant inventory data and information which has not been "collected in a manner that aids application in the planning process" (43 CFR 1610.4-3(a)). The RMP/EIS notes, for example, that a study is being conducted by the Montana Bureau of Mines for BLM aimed at determining if the coal beds in the Bull Mountains serve as aquifers in order to assess impacts of coal mining on groundwater or resources (p. 68). Such data could have a major impact on the area's coal management program, and should therefore be integrated into the planning process, rather than treated separately. Known water quality problems and BLM's participation in the "208 Planning" program aimed at identifying and controlling areas of non-profit sources of pollution are mentioned, but no attempt is made to incorporate this data or cooperative planning programs into the RMP.

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In cases where sufficient resource inventory or data has not been collected to adequately guide management decisions and analyze impacts, FLPMA, NEPA and regulations formulated under these Acts clearly emphasize the need to assemble

136 this information. Information regarding the "high erosion hazard" on the soils in much of the resource area (p. 66), inventory of visual resource management classes (p. 80), ORV and other recreational use of public lands (p. 79), should

137 be compiled and presented in map overlays or tabulated form. Conspicuously missing is any information on recreational visitor days, projected future demand and the economic impact of public land resources in terms of tourism and

138 recreation. The purpose of data requirements in BLM planning regulations and CEQ regulations is to ensure that such data is incorporated into an inter-disciplinary planning approach prescribed by FLPMA and NEPA, as well as to inform the public and encourage informed participation and comment. Where important inventory and resource data has not been compiled, it would assist the reader and future BLM management to identify these data gaps in one section.

139 We think it would be extremely helpful to the reader if a section were included under each management area in the Preferred Alternative explaining the rationale for why particular management actions are being proposed. In such a section, the findings of the other alternatives could be discussed, trade-offs identified and the choice of preferred actions explicitly explained. As now written, the reader is largely left to guess how a preferred alternative was chosen and why BLM found that the individual components better achieve its objectives than other options.

140 As BLM is aware, FLPMA requires the agency to prepare and maintain a land and resource inventory "giving priority to areas of critical environmental concern" (ACECs)(43 USC 1711(b) and priority to their designation and protection. The RMP/EIS makes only one mention of ACECs, stating that none were identified (p. 3). It is not at all clear that the inventories in the resource area gave

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140 cont. priority to identifying possible ACECs, when this effort was made, and what potnetial candidates for ACEC status were dropped from consideration. Without this information the reader cannot determine if the procedures were proper nor discuss the qualifications of potential areas.

Land Tenure Adjustment

We have found it difficult to submit detailed, in-depth comments on the proposed land tenure adjustment program, as specifically requested by BLM, because of the brief, largely superficial description of this program in the

141 draft RMP/EIS. No identification and description of the specific resource values of the land being considered for sale is given, nor does the document provide an explanation of how selling these tracts will further BLM's objective to "improve management of both public and private land" (p. 33). BLM must demonstrate that land proposed for sale meet the criteria for land sales in the Federal Land Policy and Management Act (FLPMA), such as being:

> ". . .difficult and uneconomic to manage" or serving "important public objectives. . .which cannot be achieved prudently or feasibly on land other than public and which outweigh other public objectives and values, including, but not limited to, recreation and scenic values, which would be served by maintaining such tract in Federal ownership" (Sec. 203(a)(1)(3)) (emphasis added).

142 The draft RMP proposes attempting to sell roughly one-seventh of the public lands within the "adjustment zone" in which land disposal criteria were "tested" (5,237 of 35,133 acres) yet there has been no evaluation of the individual or cumulative impacts of such large scale land sales in the resource area's watersheds, wildlife values, recreational opportunities, visual quality, and other existing and future land uses. Without such information and analysis, it is impossible to evaluate how BLM has applied the criteria for land adjustment in FLPMA, Sec. 203(a), or to comment on the impacts proposed land disposal will have.

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143 We urge BLM to utilize the current planning process to develop a better inventory of public land and to analyze how public and private land-use could be improved by adjusting land tenure patterns, rather than proceeding with a program of land disposal. BLM's objective of more efficient management of public lands would be better served by concentrating its resources on developing comprehensive land use plans on which to base land adjustment programs. Indeed, FLPMA clearly gives priority to retention of public lands and land use planning over land disposal in Sec. 102 (a)(1), which states:

> "The public lands shall be retained in Federal ownership, unless as a result of land use planning procedure provided for in this Act, it is determined that disposal of a particular parcel will serve the national interest."

In view of the scattered, isolated location of many small parcels of public land in the Billings Resource Area, it is possible that some degree of land tenure adjustment may improve both private and public land use. However, BLM's objective of optimizing public and private land use patterns will clearly be better achieved by using exchange or transfer to local governments as the primary means of adjustment, and using sales in only very limited circumstances. In recent land use plans, BLM seems to have reversed its priorities for adjusting ownership from land exchange and transfer to land sale. In many instances, the long-run benefits of "infilling" to enhance use of surrounding public land or the potential benefits of holding land for future land use significantly outweigh the benefits of land sales. As the draft RMP/EIS for the neighboring Headwaters Resource Area in Montana notes,

> "Sale often offers a simpler, quicky method of disposing of land, but decreases the long-run potential for a desirable land ownership pattern by depleting the stock of land available for future exchanges, while achieving only one-half the desired results: the disposal of undesirable tracts." (p. 112)

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Grazing

The EIS states that this statement was written in specific response to the court order and to comply with NEPA and the CEQ regulations (p. 1). Although the DEIS apparently meets the Court's schedule, it does not contain the substance of an EIS required by the Court's judgement to assess actual environmental impacts of permits and to comply with NEPA in all respects. Natural Resources Defense Council, Inc. v. Morton, 388 F. Supp. 829 (D.D.C. 1974), aff'd., 527 F.2d 1386 (D.C. Cir. 1976), cert. denied, 427 U.S. 913 (1976).

144 First, the DEIS fails to assess the "no livestock grazing" alternative which constitutes the "no action" alternative required by the CEQ regulations 40 CFR 1502.14(d)(1982) because it was "neither feasible nor legally implementable" (p. 11). As the Bureau has previously recognized, the no grazing alternative must be included in order to provide a baseline against which to compare the environmental impacts of all other alternatives.

145 The alternatives that are included are inadequate and do not involve an appropriate range of livestock levels. Only two levels are considered and one is not a genuine alternative -- 62,437 licensed AUMs for three alternatives and a 4 percent reduction to 59,816 AUMs which "may" occur (p. 24) in the Low Level Management Alternative. Neither BLM nor the public can understand and evaluate the choices that are involved in authorizing livestock use when such narrow options are presented.

146 The RMP/EIS lacks basic and comprehensive inventory data on site-specific range conditions, current and potential grazing capacity, soils and vegetation. Some range condition and soil data are presented in Table 3.5 and Appendix 2.1 but not sufficiently complete for the reader to determine actual conditions, prospects, and alternatives for each allotment. Trend data have been collected only on the 24 Allotment Management Plans (p. 70) which encompass less than half of the acreage under lease. We have been unable to locate any information

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146 cont. in the document on actual-use AUMs. Bureau officials have previously acknowledged that grazing EIS's must contain data regarding the "present grazing capacity" of the specific areas in order to support "[p]roposed levels of livestock grazing." Affidavit of Paul Leonard (Jan. 10, 1978), filed in NRDC v. Andrus, 448 F. Supp. 802 (D.D.C. 1978). See also CEQ Regulations, § 1502.22.

147 The RMP/EIS places great reliance on the largely unsupported assumption that proper and specific management actions will be taken in the future to solve acknowledged problems such as: domination by invader and increaser species because of overgrazing, "poor livestock distribution," "overstocking" and "season-long grazing" (p. 69). The document does not provide information on which actions and range improvements will be taken on which allotments and how effective they will be. What analyses it does contain are limited to the MIC categories of allotments as a group, although the problems and conflicts are identified for I Category specifically (Table 2.2).

In sum, the RMP/EIS fails to contain adequate information on existing conditions, proposed actions and environmental impacts to such a high degree that the public is excluded from meaningful participation.

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Coal

The planning team apparently has failed to use surface owner consultation as the planning tool it was intended to be, or even to understand and present the legal requirements governing surface owner consent. The RMP/EIS states that "BLM will try not to lease coal in instances where a qualified surface owner is opposed to leasing coal on his land" (Emphasis added) (p. 7). BLM's regulations require surface owner consent to be obtained before leasing for surface mining methods (43 CFR 3427.1(a)(2)). The document must explain this system correctly and clearly. The RMP/EIS goes on to state:

> "If a significant number of land owners are opposed to leasing, a portion of the coal field may be blocked out and not considered further during this RMP planning effort". Id.

148 No explanation is given as to what amount of acreage (number of landowners is irrelevant) BLM would find "significant". What is? Two maps (figs. 2.6 and 2.7) show the results of BLM's consultation with surface owners in only two of the five coal fields, but no discussion indicates how consultation was used in defining the goals, devising the alternatives and selecting the preferred alternative. From the maps it appears that leasing is opposed on about 40 percent of the acreage overlying federal coal. Is consultation merely a paper exercise? The issue is the apparent failure of BLM to use its surface owner consultation process as a planning tool in the Billings RMP.

As we have pointed out in other sections, this RMP/EIS lacks much of the inventory that is essential to a comprehensive, well thought out planning effort. Basic information is lacking or inadequate on soils, water, vegetation, and cultural resources which may be affected by mining. Only four of the twenty lands unsuitability criteria were applied and, because there is no discussion, only a figure (2.8), we don't know if those four were partially or completely applied. The question the document must address is what did you do and why did you do it?

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149 In the sections purporting to analyze environmental impacts, the reader is assured that the impacts from mining up to 9,535 acres in the Bull Mountains is mitigated by "applications of the unsuitability criteria and the formulation of proper mining plans" under SMCRA (p. 115). At a minimum, the EIS must analyze whether existing law and regulations will effectively mitigate all impacts and whether additional measures are needed. Of course, mitigation measures can't be designed until an analysis is first made of the impacts, which the RMP/EIS fails to do in a specific, quantitative fashion. For example, we are told that revegetating to ponderosa pine in mined areas "is a concern" (p. 135), but no specific data is presented or mitigation measures offered. The EIS claims that coal mining would cause wildlife species to move to "more desirable habitats" and that reclaimed areas may produce "more desirable spring and summer range for big game" (p. 119). Where are these more desirable habitats and are their present wildlife populations below carrying capacity? Would more spring and summer range be in balance with existing winter range -- a critical, limiting factor on population size.

In addition to a lack of specifity in base-line data, impacts and mitigation measures, there are two other areas in which the RMP/EIS fails to inform the reader sufficiently so that meaningful public participation can occur. First, 150 there is no quantitative analysis of the impacts of coal leasing and development on private surface owners, particularly on ranch operations overlying the coal resource and those nearby. BLM's regulations require such analysis (43 CFR 1601.0-8) and BLM recently reaffirmed this as one of the "fundamental components of the planning process" (48 CFR 20365, May 5, 1983). Secondly, the RMP/EIS states that:

> "coal exchanges would be considered when it's in the public interest to block up Federal mineral holdings" (p. 32).

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151 It appears that exchanges would be allowed if the preferred alternative is adopted. No criteria are described by which the public interest is determined and no analysis is presented on the exchange option. What are the criteria? Does BLM assume that blocking up holdings is, by definition, in the public interest?

Environmental Impact Analysis

152 A much more in-depth, specific analysis of environmental impacts -- using quantifiable estimates whenever possible -- is necessary to fulfill the agency's responsibility under 40 CFR 1502.14. In some cases, it is impossible for the reader to assess the environmental impacts in a meaningful manner due to the lack of specific management actions proposed in the alternative RMP's. The areas closed to oil and gas leasing, where timbering will take place, where utility corridors are likely to be, and the mileage and location of roads necessary to build or maintain under each alternative would all play a major role in determining the environmental impacts of each alternative, yet they are not specified or quantified in the RMP sections.

To a large extent, the sections on environmental impacts of each alternative do not go beyond the generic text-book discussions of impacts at the beginning of Chapter 4, and do not discuss localized impacts to specific areas or quantifiable impacts attributable to the proposed management actions. In the Section on impacts to soils/watershed that would result from coal leasing, oil and gas leasing, classifications, recreation access and off-road vehicle use under the each alternative, the EIS merely states that:

> "The impacts would be the same as those described in the General Impact Section" (pp. 133, 134, 146 and 157).

Meanwhile, impacts on wildlife and soils/watershed are given in terms of habitat acres and acre feet of runoff, respectively, which are not very useful in

11-12

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trying to determine effects on wildlife populations or the effect of erosion on land use or productivity.

152 cont. In addition, the EIS also assumes many impacts will be mitigated without giving an adequate explanation of why this is a valid assumption. The EIS explicitly assumes, for instance, that "mitigation of impacts to visual resources would be developed for all actions causing surface disturbances" (p. 114), and subsequently concludes that all negative impacts on visual resources would be "insignificant" or "short-term" (p. 162). Oil and gas drill sites are assumed to average approximately two acres in size but there is no mention of the amount and impact of roads necessary to accompany oil and gas development (p. 114).

153 Mitigation of the impacts of oil and gas development to watersheds would be assured by stipulations contained in the Lewiston Oil and Gas Programmatic Environmental Assessment, according to the EIS, but no further information regarding these stipulations is presented (p. 115).

Summary

We do not believe the draft RMP/EIS fulfills the regulatory and statutory intent and requirements in several significant respects. The alternatives do not present an adequate range of choices, and fail to include sufficient inventory data, specific management proposals and impact analysis for many fundamental management concerns such as watershed, grazing, coal leasing, wildlife, recreation and land-tenure. As described in our comments, there is no indication that BLM has made a concerted effort to properly inventory the resource area, use all available data, and collec., use and present this in an integrated, usable form. These deficiencies not only preclude meaningful public input and review, but also indicate BLM has not utilized the thorough, interdisciplinary planning process prescribed by FLPMA and NEPA.

11-13

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The identified deficiencies justify a comprehensive supplement to this draft RMP/EIS. The additional information, planning, and analysis that is required to make this RMP/DEIS a specific planning and analytical document would substantially change the scope and content of the existing document. For these reasons, the public, and local, state and federal agencies should be given the opportunity to comment on the content of another draft RMP/EIS.

12-1

NATIONAL WILDLIFE FEDERATION

1412 S[illegible] Washington, D.C. 20036 202—797-6800

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Bozeman, MT. 59715
June 28, 1983

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Michael Penfold, State Director
Bureau of Land Management
222 North 32nd St.
P.O. Box 30157
Billings, MT. 59107

Dear Mr. Penfold:

The National Wildlife Federation is a non-profit citizens' conservation education organization with 4.2 million members and supporters in the United States. This includes about 2,500 members of the Montana Wildlife Federation, our state affiliate here, and some 8,000 other Montanans who hold membership directly with the national organization. As your agency is well aware, the state and national Federations are extremely interested in the management and use of all our federal lands and are deeply concerned with the possible implications and results of BLM's Assets Management Program.

The following comments regarding the plans for Asset Management activities in the Billings Resource Area are based on BLM's Draft Environmental Impact Statement, contacts with BLM officers to obtain additional information, on-site inspections by Federation representatives of many of the parcels listed in the DEIS and contacts with knowledgeable land management and wildlife management specialists regarding the public values of these tracts.

The comments are being submitted with the understanding they will become part of the official public record on BLM's plans for the Billings Resource Area lands. The Montana Wildlife Federation will submit its own comments and we expect a number of our individual members to take the opportunity to express their individual views.

To reiterate some of the points made by NWF in its comments on the Dillon Resource Area disposal listings, which we made April 29 of this year, we believe BLM has the authority and the obligation to transfer jurisdiction of some of its lands to other appropriate state and federal agencies, rather than to put these tracts up for sale. We believe that a need does exist to exchange land under BLM's stewardship which have low public values for lands which have higher public values. This exchange should take priority over sales of such lands. 154

We believe, as we previously stated in our comments on the Dillon tracts, that alleged "difficulty of management" should not be a controlling factor, that some such tracts which are isolated and small still have enough public value to merit their retention regardless of any administrative problems posed your agency. 155

We also believe that exchange of BLM lands suitable for agriculture for other lands with moderate to high public values is preferable, in every instance, to disposing of such lands to encourage subdivision, with all of the problems to agriculture and wildlife attendant to that method of disposal. 156

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We are particularly concerned, and we cannot stress this too strongly, over statements we have heard that BLM's Billings Resource Area Plan is simply a "model" or a sample of what BLM really intends to put on the disposal block in that resource area. And, as we have stated previously, we believe the entire public information program on all of BLM's Assets Management Program actions in Montana has been sadly deficient. As an example, we understand that each resource area has had an "action plan" developed for use in the land disposal program. Such a plan would be key to public understanding of the implications of both the individual and the total land disposal program, yet these "action plans" have been handled strictly as internal documents despite the fact they represent the real intentions of BLM in this entire process.

157 As a result, we are asking here that the state office of BLM make these plans available to us in their entirety for each resource area in Montana. Lacking this information, the public is at a loss to determine what BLM's full intentions are and how they will affect our public land base and our citizens here in Montana.

With respect to the Billings Resource Area DEIS, we also are extremely concerned over the obvious short shrift given to wildlife and other public amenity values and the ultimate impacts on both which could and probably will result if many of these tracts are sold.

158 This is particularly true when one considers that the DEIS may contain only a portion of the BLM lands scheduled for disposal. If it is true that the DEIS was designed to serve only as a "model" or a sample of what BLM intends to do with these and a large number of other tracts, the DEIS is worthless as a working tool under NEPA, FLPMA and a number of other federal statutes.

159 The NWF believes, after closely reviewing the DEIS, that it is oriented almost solely toward production of saleable commodities and is significantly deficient in addressing other public values or amenities such as fish and wildlife, public use and public access.

160 It appears on review that the DEIS is a document written with the belief that good grazing automatically means good wildlife management and production. Enhancing grazing does not automatically improve habitat conditions for wildlife. There is ample research available to both range managers and wildlife scientists to document this. Good grazing and good wildlife management can co-exist but only if carefully coordinated.

161 Because of the obvious deficiency in the DEIS as it deals with wildlife, the National Wildlife Federation asks that site specific wildlife improvement plans be developed for every tract managed by BLM. These should be done professionally and updated regularly as any other commodity production or extraction activities are planned for these same tracts. The total lack of any thought about this problem in the DEIS is one of its glaring deficiencies. And, we might add, this should be done by fully competent, professional wildlife biologists and not left up to persons of other disciplines who do not understand or appreciate these relationships and values.

162 While this may sound unduly critical, BLM must recognize that under its current Assets Management Program, the public is receiving very little useful information and on a totally unrealistic time schedule. The public's only recourse other than expending thousands of hours and dollars trying to make sense out of these vague and incomplete documents is to again urge the agency to develop a more proper balance in its dealings with private commodities and public values. A glance at the listing of the credentials of those who prepared this DEIS indicates very clearly that such a balance does not exist.

12-3

In fairness to the agency, close review of other Assets Management Plan documents for other resource districts do not show them to be so singularly lacking in scope, depth and treatment of wildlife and other public values. It does appear that these latter values received very superficial treatment in the Billings area DEIS.

163 Of particular concern in this respect is the implication that wildlife conditions improve automatically as livestock forage conditions improve. This notion has been dispelled by many individual studies. For instance, the Nielson study in 1978 when he studied rest-rotation grazing north of Malta, on the Cottonwood allotment, showed that system of range management to be quite detrimental to sharp-tailed grouse. This is only one of many such studies drawing the same conclusions.. Close coordination of range management plans between range and wildlife managers could prevent such wildlife losses and probably benefit both livestock and the grouse population there.

164 Another example is the plan of BLM to eliminate sagebrush on BLM tracts just north of Powel and Cody, Wyo., areas which are in the Billings Resource Area. The implication that sharptailed grouse would benefit is questionable at best.

165 The DEIS also appears incomplete in that the preferred alternative of BLM for most tracts does not mention or identify those areas which support excellent wildlife populations and habitat. There are quite a number of these among the BLM tracts and a balanced treatment of resources would call for giving these areas some special management emphasis.

166 For example, the southeast quarter of Twp.9, Range 24E, is premium sage grouse country and Twp. 9 S, Range 21E, is above-average habitat for the same species. If these areas are targeted for sagebrush burning or removal, the NWF must object to that plan strongly because of the heavy hunter use which occurs there.

167 NWF concurs with the Montana Wildlife Federation's concern over the lack of any provisions in the DEIS on a site-specific basis for non-game species management or public education or interpretive activities. With the Billings area being one of the largest metropolitcan areas in Montana, it would seem inappropriate to neglect this area of management.

168 While the above comments may have a negative tone, please understand that this is based largely on the fact that we have difficulty in many instances in finding an alternative that NWF could support. We have no difficulty accepting recommendations for management that would help improve conditions to better maintain existing livestock quotas. But it appears inconsistent that BLM places no emphasis on improving wildlife conditions as part of its grazing management or improvement proposals. In some instances, providing better wildlife habitat might require a reduction in AUM's, while in other instances, increases might be acceptable.

Obviously, the meshing of wildlife and livestock interests in the development of good management plans for each tract will require intensive initial planning followed by well-planned and frequent coordination. It is also obvious that NWF cannot support any high-rated alternative which proposes an unrealistic increase in AUM's such as one alternative which proposes a startling 38 per cent increase.

12-4

168 cont. Adoption of Soil Conservation Service Utilization Standards without modifications which take into account wildlife needs is unacceptable from a multiple-use agency such as yours. Obviously, grazing to the point where only short stubble remains is detrimental to most forms of wildlife.

169 We also are disturbed by the repetition of the attitude that increased water availability automatically equates with habitat expansion. Water development on rangeland, if it is to benefit wildlife, requires careful coordination by a fully qualified wildlife biologist. All too often, increased stockwater only leads to heavier grazing and less residual or ungrazed cover, one of the primary requirements of many upland and rangeland wildlife species.

170 The treatment of the timber/wildlife management relationship in the DEIS concerns NWF because it is, at best, a superficial handling of wildlife needs. In most of eastern Montana's forested areas, the critical limiting factors on big game populations is escape and thermal cover. Both are in short supply. The implication that timber harvest <u>always</u> leads to habitat improvement for wildlife is totally false; competent wildlife managers would never support such a contention.

Listed immediately below are those tracts which we have examined and which we agree could be exchanged for other lands of high public value. While some of these have moderate or higher public values for wildlife, they often are located in areas where land use is not likely to change significantly or are so small that their wildlife values are not significant. These are identified by the code numbers used in the DEIS:

1-D	30-D	37-D	56-D
8-D	31-D	41-D	61-D
21-D	32-D	47-D	66-D
26-D	33-D	48-D	67-D
27-D	34-D	52-D	
28-D	35-D	53-D	
29-D	36-D	55-D	

171 NWF recognizes the need for additional protection of riparian habitats in the Billings Resource Areas and would support exchange of the above tracts for such lands.

NWF recommends retention of 71-D because it is winter range for mule deer. It is close enough to the Stillwater River to provide high public values if BLM could obtain some river frontage in conjunction with this tract.

24-D and 25-D should be retained in public ownership because they represent above-average habitat for deer. It is possible these lands will be open for public use to some extent in the future and their proximity to state lands makes their retention important.

NWF supports the retention of 20-D because of its prime value as bottomland habitat for both birds and deer.

Both 3-F and 4-F should be retained because they have known sharptailed grouse dancing grounds and nearby public access. If these go into private ownership, undoubtedly they will be plowed and their excellent wildlife values lost.

12-5

171 cont. Tracts 69 and 70 should be retained because of their location in a watershed or drainage which provides excellent habitat for sage grouse and mule deer.

There are several areas known to have high wildlife values but may not fit a "key" or "critical" classification presently. Data from the field is not sufficient at this time to permit us to support an unqualified release of these areas. We suggest that a competent state wildlife biologist be requested to investigate each of these sites before any recommendation for exchange or other disposal is made. These include Tracts 20-D, 21-D, 25-D, 8-F and 9-F.

High quality wildlife habitat near an urban area is important. Tract 65-D, which contains high quality sage grouse habitat, fits this criteria and this tract should be retained.

Tracts which can provide a green belt adjacent to residential areas or subdivisions rate high priority for retention. Tract 42-D is an example of this and should be kept for its public values.

Tract 62-D has timbered breaks which are adjacent to farmland and to the city of Billings. Because this tract also contains good wildlife habitat, it should be retained.

Good mule deer habitat is at a premium in areas which are subject to development by subdivision. Tracts 5-D and 6-D are good examples of this and should not be traded, sold or otherwise lost.

Tract 4-D lies close to state land with public access and contains good grouse, pheasant and other upland game habitat. This land should not be traded or sold.

Tract 5-F contains excellent sage grouse and sharptailed grouse habitat and is in an area with a very small amount of public land. It should be retained by BLM.

The only other BLM lands we have had time to examine are those tracts in the Bull Mountains which, we understand, contain a limited number of small mines which satisfy local demands for lump coal. These should be retained by BLM so they will continue to serve that function and should not be traded or sold so as to permit major development.

This concludes the National Wildlife Federation's preliminary comments on the Billings Resource Area DEIS. We ask that these be given careful consideration and be included in the official record. We are willing to discuss specifics referred to herein at any time.

172 We also ask that BLM continue to advise both the National and the Montana Wildlife Federations of any actions or proposed actions on any BLM lands in this and other BLM Resource Areas and districts in Montana. This includes all announcements of pending actions, plans, hearings, issuance of EA's, DEIS's, FEIS's, records of decisions, final decisions and notices of realty actions which in any way relate to the Assets Management Program.

We might add that we are frankly disturbed by information that comments by groups will be given only as much weight in your decision-making process as single pieces of correspondence from individuals. We believe this to be completely out of compliance with the federal statutes calling for BLM to exercise its obligation to fully inform the public of its actions and plans and to provide for honest and full public participation and input.

To assist your agency and its various offices in Montana in making certain that we are kept fully informed and abreast of the agency's programs and plans, we request that <u>all</u> relevant information be sent to both of the addresses listed as follows:

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12-6

Charles J. Griffith
Regional Executive
National Wildlife Federation
12 Gardner Park Drive
Bozeman, MT. 59715

Emily Stonington
Executive Director
Montana Wildlife Federation
P.O. Box 3526
Bozeman, MT. 59715

Thank you for the opportunity to comment for the record on the Billings Resource Area DEIS.

Sincerely,

Charles J. Griffith

Charles J. Griffith
NWF Reg'l Executive

13-2

elsewhere if too many horses are lost to removal and natural attrition.

Very truly yours,

Russell J. Gaspar
Attorney for American Horse Protection Association, Inc.

cc: Joan R. Blue
Hope Ryden

- 2 -

13-1

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CALVIN P. JOHNSON*
JOHN H. MONTGOMERY
ROBERT L. OSWALD
JOSEPH E. SCHULER
NANCY A. MURRAY

OF COUNSEL
MARIO T. NOTO
EDWARD J. BELLER
FRANKFURT, WEST GERMANY

*ADMITTED TO PRACTICE IN MISSOURI ONLY

July 14, 1983

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Jerome W. Jack
Manager, Billings Resource Area
United States Bureau of Land Management
810 North Main Street
Billings, Montana 59105

Dear Mr. Jack:

I am enclosing for your reference a copy of the comments submitted by the American Horse Protection Association to the Montana State Office regarding the Billings Resource Management Plan and draft EIS.

173 For the reasons set forth in those comments and expressed to you by Hope Ryden in her letter of July 9, AHPA believes that a roundup of horses in the Pryor Mountains is unnecessary this year. This is particularly true of a removal of 30 - 40 horses, as was originally proposed. The current population is very close to the target population set in the EIS, even accepting that target as an accurate reflection of the Range's carrying capacity. The fact is, however, that the Range certainly can support more horses than the EIS estimates.

We have discussed at length the risks associated with reducing the Pryor herd too far. Avoidance of these risks is especially important due to the unique physical characteristics of the Pryor horses. Since BLM removed a large number of animals last year, AHPA believes that this year's roundup should be approached with far more caution. Even assuming that inaction is an error, it would be far better to err conservatively. The Pryor herd is small, and its characteristics cannot be reproduced

13-3

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July 14, 1983

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Michael J. Penfold
State Director
United States Bureau of Land Management
222 North 32d Street
Billings, Montana 59107

re: Draft Environmental Impact Statement, Billings Resource Area

Dear Mr. Penfold:

I am writing on behalf of the American Horse Protection Association, Inc., and Hope Ryden to comment on the draft EIS for the Billings Resource Management Plan. By way of preface, AHPA agrees with and supports Miss Ryden's oral comments at the public meeting in Lovell on June 1, and the written comments she has previously submitted.

174 AHPA's principal criticism of the EIS is its decision to establish a target population of 121 wild horses on the Pryor Mountain Wild Horse Range. A herd of 121 horses is the basis for analysis of all of the alternatives, and, from the tone of the draft (e.g., draft at pp. 35, A-32), apparently is regarded by BLM as the most likely long-term population, regardless of the alternative selected.

The population target is in part a function of the forage production data developed during the 1981 range survey. As Miss Ryden has noted, that survey probably produced somewhat conservative forage production values; last year's rains certainly must have improved forage conditions and provided a greater degree of flexibility in managing the Pryor herd. As a result, the estimate of total AUM production set forth in Appendix 2.3 may well be on the low side.

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Of more importance is the use of a 1.25 conversion factor in determining how many wild horses the estimated AUMs can support. AHPA wants to reiterate, in the strongest possible terms, that that conversion factor is clearly not in accord with the research recently conducted under the auspices of the National Academy of Sciences. As a result, the wild horse carrying capacity computed in Appendix 2.3 is erroneous.

The NAS study found, on the average, that mares consumed about 14 percent more forage than cows. The differential was greater for lactating mares, but considerably less for non-lactating mares. The study did not measure consumption rates for male or immature horses. However, it noted that the consumption rates of mature female horses did not vary significantly by the weight of the animal. This implies that consumption by mature males probably is not too different from non-lactating mares. Consumption by immature animals is probably much less.

In the context of a wild horse herd, this means that average consumption per animal is nowhere near 25 percent greater than that of the typical lactating cow/calf unit that is assigned one AUM for BLM planning purposes. As Miss Ryden has noted, the large majority of horses in a wild herd will be non-lactating mares, immature animals and stallions, all of which will probably consume less forage than a lactating cow. On a herd basis, therefore, this compensates for the higher level of consumption by lactating mares and draws average horse consumption down to a level close to that of a lactating cow.

175 Therefore, the draft should be modified to use one AUM as the monthly unit of consumption for wild horses. This would set the Range's carrying capacity at 152 horses. In addition, it would make the draft consistent with many other grazing EISs AHPA has reviewed, nearly all of which use one AUM per month as the unit of wild horse forage consumption.

176 AHPA agrees with the draft's proposal to reduce the current female/male imbalance in the Pryor herd, provided that BLM establishes the ratio at approximately 50/50. The use of the phrase "heavy to studs" (draft p. 35) is of concern to AHPA, since it implies that creating a preponderance of male horses is BLM's goal. That is not desireable, and AHPA opposes it.

As the draft notes (p. 159), correcting the male/female imbalance will lower reproduction rates to a level close to natural mortality rates. This will slow the herd's growth rate considerably, reduce the need for frequent roundups and

13-5

substantially reduce costs associated with the wild horse program. AHPA believes that BLM's efforts to correct the imbalance in the sex ratio should be coordinated with its efforts to perpetuate the unique characteristics of the Pryor Mountain horses. That is, the removal of excess animals (especially excess mares) should concentrate on those animals that clearly do not contribute to the outstanding array of colors and other characteristics found only in the Pryor horses. However, more intensive management activities such as relocating stallions for the purpose of genetic manipulation should be avoided. For this reason, (and to prevent opening the range to mineral and timber operations), AHPA opposes implementation of the high level management alternative.

177

AHPA is in accord with the other points made in Miss Ryden's comments. In brief, these are as follows:

1. AHPA supports the proposal to purchase 2,240 acres of additional land for the Pryor Mountain Range;

178 2. AHPA questions the need for seven additional miles of fence. In particular, since the need for roundups probably will be reduced as the male/female ratio of the herd is normalized, why are an additional two miles of fence needed to improve "the efficiency of capturing the horses" (p. 35)?

179 3. AHPA is concerned by the reference in the draft to the "long-term significant impacts" on wild horse management that are expected if the wilderness study areas are in fact designated as recommended (p. 160). What are these impacts? Why are they significant? The draft is woefully short of data on this point, and must be supplemented.

180 4. AHPA recognizes that the construction of five additional water cachements (p. 35) could improve grazing distribution by wild horses and thereby increase the Range's carrying capacity. However, that assumes that the new cachements will be used. As Miss Ryden notes, the two existing cachements aren't in use; it is futile to build additional unused equipment. The draft should be more explicit about the purpose, location and intended use of the existing and planned cachements, and explain why such a considerable investment of funds will be worthwhile.

13-6

I have enclosed the photographs referred to in Miss Ryden's comments, and ask that they be made part of the record.

AHPA looks forward to your response to these comments, and will be happy to discuss them with BLM personnel as the Final EIS is prepared.

Very truly yours,

Russell J. Gaspar
Attorney for American
Protection Association, Inc.

cc: Joan R. Blue
Hope Ryden
Jerome W. Jack

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Michael J. Penfold, State Director
Bureau of Land Management
P.O. Box 30157
Billings, MT 59107

July 13, 1983

SUBJECT: Comment Draft EIS Billings Resource Area

Dear Mike,

Old habits are hard to break--somebody gave me a copy and I started scratching with pen and pencil.

For the most part, this EIS reflects the long trail that the procedure has been. It is quite readable and not sglang or detailed as were some others. It does have some overlap of problems with coal, oil, gas, grazing, wild horses, and ORV, so it is a commendable effort.

One area of coverage I find rather short. You have a dispersed and broken ownership pattern in Montana. This EIS covers an area where it is more so. You have a lot of small tracts. It is mentioned on page 1, column 2 and on page 79 under recreation. Almost all the rest of the write up chooses to ignore it and act like it just isn't so. I would think you would have tempered, maybe avoided, some of the attacks on the land adjustment program if this situation had been emphasized more. There is mention of this with the discussion of the "C" classification of grazing permits, but, again, passed off very lightly. The statement, page 140, column 1, concerning the need for cooperation in weed control would be equally true on all management for these small tracts.

The land adjustment program is a real tiger to the small livestock operator as you have probably heard. Eighty acres of rocks with a few trees and topographically very hard to get much use of, if there is even forage to be sold. There is usually somebody who would like to have "their ranch." If the rancher doesn't or can't out bid then then the negative values start. Fences and fence troubles, access troubles with lawyers fees and years of kids, pets, and traffic in the middle of a grazing program. They are the ones that are in a bind but that does not wipe out the need to resolve some of the scattered tracts.

181

182 I have long supported your efforts to concentrate the wild horses and their problems in the PMWHR. I do question the assumption that adjustment of numbers will achieve adequate management--page 35, column 1, page 69, column 2 and page 119, column 1. This is especially so given the range condition shown on page 6. Adjustment of numbers usually narrows the impact areas but does not result in much overall improvement. I also question the conversion factors used on these horses to adjust the grazing. I have used a 1.5 or 1.75 AUM per horse month for thirty years. In a couple cases where

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there were a substantial horse count present they still overate the allotted forage. Their areas suffered. There may be better scientific data to work with but it has been long known that horses are eaters. If it is available, they do not quit.

I also question if you can achieve resource and watershed values in the presence of ORV use as suggested on page 37, column 2. I am aware that you must try, but so far there have been few successes in the write up:

A couple of small errors I noted in reading:

183 Chapter 3, page 53, you left out the Little Belt Mountains which, like the Snowys and Crazys, are on the edge of the area.

184 Page 71, column 1 and page 72, you have an error concerning the L.U. program (Bankhead Jones Act). Both state the primary purpose was to stabilize the soil. Not so! The primary purpose was to stabilize the agriculture. The lawyers tell me that it has been written out of the law now and nobody can explain how it happened, but it was there in the original and tied to the L.U. lands for many years.

185 Page IV, column 1 and page 31, column 2 refer to the range conditions on the flood plain in the woody type. I've been through this many times. To some the more woody plants the higher ecologic condition. Once you get close to 50% canopy, it is not a range condition as most forage plants are shaded out. There is real debate on the ecology of these sites and what is near climax. First, because they are very variable sites with widly varying moisture conditions. Second, brush is not a climax plant type in many places and to assume it is in this area is quite an assumption. I haven't been around very long, but I've seen willows, cottonwood, and aspen come and go on flood plain areas, helped by beaver, disease, or wash impact. I don't believe it is a good assumption that the species of plant that favors your animal is necessarily good conditions.

186 I hesitate to mention wilderness. I have never understood how the wilderness individual looks and brags about the experience with statements like, "I didn't see anybody for ten days," then fights like mad for an area for wilderness that is not any different than I've range surveyed many times and been through it and back by lunch time. I firmly believe the 5000 acre limit was put in by people who don't know this country. It is just not a "big" area in this country. I would oppose such designation on the PRNGR if it adds even a little bit to the management problems that you now have.

187 Your statement on permit value, page 109, is quite correct. Small permits are usually of no value. Then you show small ranchers with a $19,100 added value. This should be a 191 AUM permit. This is more than permitted on the entire "C" list with eight exceptions. There is a substantial number in the "M" & "I" that do not have that size of permit. Someplace between

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187 cont. page 103 and the top of 109, you changed the entire base of thought plus the figures on 109 do not fit this area very well. A very large share of your permits in this area would have little or no value.

188 One item that surprised me was the mention of land acquisition for fish and wildlife. (Page 32 and 36). I know the State FW & P is buying game ranges and the Federal F & WS is acquiring refuges for migratory and other game, but when did the BLM join this effort? I didn't even know you had that authority.

Thanks for this opportunity to comment. I am especially pleased to note this progress on what has been a long job.

Sincerely,

Chuck Hitch

C.W. Hitch

Xer: Billings Area Office
Montana Public Lands Council

CEH/jah

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NORTHERN PLAINS RESOURCE COUNCIL

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Jerry Jack
BLM Area Manager
Billings Resource Area
810 East Main
Billings, Montana 59102

July 15, 1983

Dear Jerry:

Enclosed please find the comments of the Northern Plains Resource Council on the Draft Environmental Impact Statement and Resource Management Plan for the Billings Resource Area.

NPRC appreciates the opportunity to comment on the RMP/EIS, and hopes that you will find these comments helpful in improving the document before final publication.

If you have any questions about these comments, please do not hesitate to contact me.

Sincerely,

John D. Saillie

John D. Saillie
NPRC Staff

cc: Senator John Melcher
Senator Max Baucus
Congressman Ron Marlenee
Congressman Pat Williams
Governor Ted Schwinden

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Comments

on the

Draft Environmental Impact Statement

and

Resource Management Plan

Billings Resource Area

Submitted by the

NORTHERN PLAINS
RESOURCE COUNCIL

July 15, 1983

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GENERAL COMMENTS

Bull Mountain Coal Lease Recommendations

The Bull Mountains are widely recognized as a unique area, a productive agricultural area, and an area with abundant wildlife and incomparable scenery. The existing land use plan for the area, the 1973 Bull Mountain and Buffalo Creek Land Use Recommendations ("1973 MFP"), recommended that federal coal in the Bull Mountains not be leased, because:

"it is not known whether the Bull Mountains topography, geology, hydrology, or soils would permit successful reclamation, and the Ponderosa Pine ecosystem probably could not be reclaimed;

"the coal bed is such that mining would disturb a large surface area per ton of coal produced, compared to other coal in the region, and it only makes up 0.22% of all strippable coal in the Fort Union formation;

"a relatively large non-coal producing area would have to be removed from production, compared to other areas in the Fort Union region; and

"the mineable coal bed lies in a circle around the Bulls, so that erosion would be a serious problem, and reclamation of critical drainages to their original form would be "impossible".

The MFP added that "(i)f a significantly higher degree of national commitment to coal develops, these recommendations would be reconsidered..."

The national commitment to coal has not significantly increased since the days when the MFP was adopted--at the height of the "energy crisis". Certainly, demand for new coal mines in the West, and the long term prospect (into the next century) for increased demand, is far less than it appeared to be in 1973.

189 The Draft RMP decision, reversing the finding in the existing plan, finds areas in the Bull Mountain coal fields as acceptable for leasing. That decision is unwarranted, and is not justified anywhere in the plan. The document makes no attempt to explain the change, or to show the need for this decision. The Draft RMP fails to analyze the unique local resources in conflict with that decision[1], or to modify or update its earlier findings regarding the unresolved problems of stripmining in the Bull Mountains and the relative insignificance of the coal resource that would be "lost" if it were not mined.

The RMP does not discuss any changes to the information on which the 1973 decision was based. If there have been any such

1. There are a few, brief discussions of the effect of mining on other resources, but they are incomplete, and so vague that the discussion could apply to any other coal area in the West. Very little in the way of localized data was collected, and no discussion or evaluation specific to the Bull Mountains is included.

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189 cont. changes, they could only lend further support to, and confirm, that original decision. The coal market in the West has stopped its exponential growth, and is leveling off. Demand for new federal coal leases, already weak, has been glutted by the recent Powder River coal sale. Any conceivable demand can be met with the federal coal already under lease. Western coal mines are, generally, in areas that are much easier to reclaim, with less surface disturbance per ton of coal, and less associated off-site disturbance, than would be true of Bull Mountain mines.

190 On the other hand, BLM has provided no new information in the RMP to indicate that reclamation in the Bull Mountains is feasible, that groundwater can be protected, that surface drainage erosion can be controlled, that Ponderosa Pine can be reestablished, or that there is or will be a need for the coal.

Instead, the RMP is based on two erroneous assumptions. First, BLM has assumed that its obligations to evaluate the conflicts between stripmining and other resources, to analyze impacts, and to propose steps to mitigate impacts of plan decisions, all can be fulfilled simply by noting the existence of the Surface Mining Control and Reclamation Act. Time and again, the RMP assures the reader that SMCRA will mitigate the various impacts of mining. This is plainly inadequate to meet the requirements of the Federal Lands Policy and Management Act (FLPMA), and the National Environmental Policy Act (NEPA). SMCRA does not prevent all impacts from occurring, and its existence does not automatically prevent any impacts from occurring. Moreover, BLM has not even tried to analyze whether SMCRA requirements could be met (as it is required to do in the Federal Lands Review in each land use plan, under section 522(b) of SMCRA). Even if SMCRA did require that no impacts occur from mining, BLM has an obligation to assess, in this plan, whether SMCRA's requirements could be met.

191 Second, BLM apparently assumed that its duty was to screen lands and pass land forward to activity planning--that is, all land that was not (for some specific reason) unsuitable, should be leased. This turns the commands of FLPMA, the Federal Coal Leasing Amendments Act (FCLAA), SMCRA, and implementing regulations on their head. The statutes cited say that no coal may be leased unless it has passed through the required planning steps. The statutes do not say that all coal that is not eliminated must go forward to leasing. Yet that is the assumption on which the RMP decision was based.

That BLM was operating from this assumption can be deduced from the fact that there is no discussion whatever, anywhere in the RMP, of the reasons behind the decision to choose the "High Level" Management Alternative over the existing management alternative.

If there are no reasons to change the recommendation of the existing land use plan, there are several reasons not to change that decision.

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191 cont. First, most surface owners are opposed to leasing in the Bull Mountains, and very few are in favor of leasing (most of the latter are unqualified surface owners). It is clear that a "significant" number of surface owners are opposed to leasing in this area and that the area (the entire coal field, not just the coal under the land of opposed surface owners) should be eliminated from further consideration under BLM's regulations (43 CFR 3420.1-4(3)(4)(i)).

192 Second, most of the inventory and application of the unsuitability criteria (43 CFR 3461) applicable to the Bull Mountains has not been completed, or received any mention at all in the plan.[2] There is no reason to further consider the coal for leasing until the application of criteria is completed. Since there is no pressing need for the coal, and since land use planning is the proper and most efficient time to apply the criteria, the Bull Mountain coal field should not be considered for leasing until the plan is reviewed in the normal planning cycle, or until the plan is amended, and it includes the complete application of all unsuitability criteria.

193 Third, the RMP analysis of the coal decisions is inadequate. It fails to analyze conflicts with other resources in the comprehensive manner required by FCLAA, and it fails to analyze the impacts of its decisions on the resources and environment that may be impacted as required by NEPA. The RMP fails to provide a meaningful multiple-use analysis, or to summarize or display the results of the "multiple-use screen" required for coal lands. (That "screen" does not constitute BLM's full obligation to study any lands recommended for lease in a comprehensive land use plan, in any case; it is merely a descriptive term used in the coal leasing regulations.) The RMP fails to display the results of the application of the various unsuitability criteria which were applied on a map, or to discuss the application process anywhere in the narrative. The RMP also fails to incorporate--into either its multiple-use or EIS analysis--the requirement of FLPMA planning regulations (1601.0-8):

> ...the impact on local economies and uses of adjacent or nearby non-federal lands and on non-public land surface over federally-owned mineral interests shall be considered. (Emphasis supplied.)

194 Finally, there is no need to recommend areas for leasing in order to lease coal to maintain production at existing mines in the Resource Area. Any needed leasing for this purpose

2. This raises the issue of whether the RMP coal decisions are in compliance with 43 CFR 3461 regulations. The plan does not say when the unfinished studies will be completed, as those regulations require, nor does it explain why they weren't completed.

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194 cont. can be accomplished through applications for lease.

For all of the above reasons, BLM should adopt the "Existing Management" alternative for coal leasing in the final plan.

Fee Coal Exchanges

The recommendation, that federal coal be considered for exchange, should be dropped from the final plan. The only potential exchange would be for the purpose of "consolidating" checkerboard coal ownership patterns. As NPRC has conclusively demonstrated in our comments on, and protest of, the proposed BN-BLM exchange at Circle West[4], section 206(a) of FLPMA does not authorize coal exchanges for this purpose.

The only party that might be interested in such an exchange, and the only party with any resources to propose for exchange, is the Burlington Northern Railroad and its wholly owned subsidiaries. The United States Congress has expressly stated its finding (in section 2(c) of the Mineral Leasing Act of 1920) that it is not in the public interest to allow railroads like BN to haul coal and mine coal concurrently. By definition, then, a "consolidation exchange" in the Bull Mountains cannot ever be in the public interest.

195 BLM has no guidelines or procedures for evaluating such exchanges. Hearings will be held in the Senate Energy Committee to investigate the propriety of BLM-railroad coal exchanges in the near future. Pending BLM-railroad exchanges are the subject of administrative review, and may very well be reviewed by the judicial branch. A decision to recommend areas for "consolidation exchanges" would be premature in light of the lack of BLM policies, procedures, and guidelines; it would be an affront to the Senate Energy Committee; and it could be preempted by administrative or judicial review.

The recommendation is also premature in light of the incomplete nature of the application of unsuitability criteria in the area recommended for exchange.

An exchange with Burlington Northern or its affiliates would clearly violate the public interest, and it would be a blatant evasion of the expressed will of Congress. NPRC

4. There is no need to reiterate the argument here: our comments on and protest of the proposed exchange are hereby incorporated by reference. We also note that BLM does not seriously consider these exchanges to be section 206(a) exchanges--otherwise, the recommendation made here would have been in the "land tenure adjustment" section of the RMP. There is no authority anywhere in the coal program for "consolidation" exchanges.

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195 cont. and its members in the Bull Mountains have no intention of allowing any such exchange to go forward, for all of the above reasons. We urge, in the strongest terms, that this recommendation be deleted in the final RMP. At a minimum, we suggest that BLM clarify that no exchange with Burlington Northern will be considered in the Bull Mountains.

Asset Management ("Land Tenure Adjustment")

The Northern Plains Resource Council is not opposed to sales of the public lands, if such sales are conducted fully according to the requirements of the law. (NPRC is opposed to programs which attempt to reduce the federal deficit through land sales, or which otherwise dispose of lands other than through a case-by-case review as required by FLPMA.) The disposals recommended in the Draft RMP have not been conducted, thus far, in full compliance with existing law. Instead, the RMP appears to be oriented towards a general disposal program, with inadequate attention paid to the pre-sale requirements of FLPMA.

196 The analysis in the RMP is inadequate as a basis for selling tracts of land. The first sentence of FLPMA reads:

> Section 102. (a) The Congress declares that it is the policy of the United States that--
> (1) the public lands be retained in Federal ownership, unless as a result of the land use planning procedure provided for in this Act, it is determined that disposal of a particular parcel will serve the national interest.
> (Emphasis supplied.)

The RMP does not discuss the impacts of, or evaluate, any "particular parcel" of land. The RMP merely lists criteria (in the Appendix) alledgedly applied to the "Land Tenure Adjustment Area". There is no description, even, of the process by which this vague list of criteria was applied--much less an analysis of how the criteria were used to arrive at the recommendation to dispose of individual parcels made in the RMP. There is certainly no indication at all of how the determination required under section 203(a) of FLPMA was made for each tract.

197 NPRC is very concerned about the RMP's allusions to disposal of land outside the "Tenure Adjustment Area". The procedure to be followed is not clearly defined; but it appears that BLM intends to apply the "criteria" to almost 90% of the Resource Area and recommend lands for disposal, wholly apart for the land use planning and EIS process required by Congress. BLM should keep in mind that no parcel may be disposed of unless such disposal is specifically determined to be in the public interest in the plan. Publication of

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197 cont. disposal criteria in the Appendix does not meet this requirement. BLM may not dispose of any parcel of land through any subsequent review unless it is accomplished through comprehensive land use planning fully meeting the requirements of section 202 of FLPMA.

SPECIFIC COMMENTS

CHAPTER 1--PURPOSE AND NEED

P. 3--Areas of Critical Environmental Concern are listed as an issue not analyzed as part of the land use plan alternatives, because there were "none identified".

FLPMA regulations, 43 CFR 1610.7-2, require that areas having ACEC potential "shall be identified and considered throughout the resource management process," and that inventory data shall be analyzed to determine that potential. In order to have potential, ACEC's must have some significant value, and some regional or national importance.

It is difficult to believe that there is really nothing in the entire area--which includes the Yellowstone River, the Elk habitat of the Bull Mountains, and the Pryors--that would qualify as having the potential for ACEC designation. It is plain that BLM has failed to meet its obligation here.

The RMP then says that "if such areas are identified, and their resource values cannot be protected through other management techniques, ACEC designation will be proposed."

198 What process will be used to identify such areas? Will BLM step up its inventory efforts (also required by FLPMA) in order to identify these areas? How will the public be involved in this process?

FLPMA says nothing about limiting the study of potential ACEC's, or the designation of ACEC's to areas where no other means of protecting values exists.

199 P. 4--Wildlife programs are listed as a Billings Resource Area Responsibility not analyzed as part of the land use plan alternatives. The first sentence appears to refer to coal lease activity planning. If this is correct, the RMP should say so.

However, if this is the meaning of the sentence, BLM has ignored its responsibilities to conduct this wildlife program in the plan (43 CFR 3461).

200 Another program "not analyzed" in the alternatives is the "Lands" Program, including proposals to exchange subsurface acreage. This paragraph should be clarified in the final to note that FLPMA, and BLM exchange regulations, clearly require that any parcel of land to be exchanged or acquired through

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200 cont. exchange must be found suitable for such acquisition in a plan or plan amendment, and that any such exchange proposal would therefore require consideration in the alternatives in this plan, or a plan amendment.

This comment also applies to proposals to purchase public lands.

Major Issues (P. 7)

201 Coal Leasing: ...a decision is needed on those areas which are acceptable for leasing".

This is the only statement concerning the need for the coal decisions in the RMP, and it is clearly inadequate. There is certainly no need to lease. The "need" referred to here should be identified in the final RMP, unless BLM adopts the "Existing Management" alternative for leasing.

202 The description of the "Multiple-use Screen" erroneously indicates that land must be found "unsuitable" through this process, in order to be eliminated from consideration for leasing. There is no such requirement. Rather, what must happen at this step is that the conflicts between coal mining and other resources (public and private) must be analyzed, and a determination made as to what uses should be allowed, and how impacts to other resources may be mitigated. See 43 CFR 3420.1-4(e)(3).

No matter how described in this chapter, there is no evidence that multiple-use decisions were ever made for the coal lands recommended for lease in the Draft RMP.

P. 8

203 Land Tenure Adjustment: The RMP says that the disposal and retention criteria "will be applied to the remaining lands outside the Land Tenure Adjustment Area."

When will these criteria be applied? How will they be applied? How will the requirements of section 102(a) and section 203(a) of FLPMA be met?

CHAPTER II--ALTERNATIVES

Existing Management Alternative

204 P. 17--Coal Leasing: "Industry has expressed interest in Federal coal from the Bull Mountain and Joliet-Fromberg fields for both underground and surface mining potential."

Who expressed interest? When was it expressed? How much coal was requested in the expression?

205 Land Tenure Adjustment: The RMP says that there would not be much increase in disposal under this alternative, based on the current level. "However, on the basis of current administration proposals for land tenure adjustment, these trends could be increased substantially.

The proposals for adjustment from the administration should

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205 cont. be fully described. How would these proposals "increase trends" (sic)? If there were more "adjustments", then the alternative would no longer be the "Existing Management" alternative.

206 The third paragraph (p. 8, col. 1) describes the development of the adjustment criteria and their use by BLM. The procedures outlined here, especially for areas outside the "Tenure Adjustment Area", do not meet the requirements of the law for disposal of parcels of land, as discussed in the General Comments, above. The Land Tenure Adjustment proposal here is not part of "Existing Management", anyway. The Land Pattern Review and Adjustment Project Management Plan is not listed in the Glossary as claimed.

Low Level Management Alternative

207 P. 25--Wildlife: The discussion should include a recommendation to inventory for and apply the wildlife unsuitability criteria to areas found acceptable for leasing pending further study.

208 Coal Leasing: The RMP says that no mine size or mining method is proposed. This appears to conflict with the earlier statement that there is industry interest.

The 1988 timeframe for opening a mine in the Bull Mountains is unlikely, since coal could not even be leased until at least 1986.

209 The assumption that 50,000 tons per year would only disturb 3 acres is extremely optimistic: most of the coal in the field doesn't approach 17,000 tons per acre. Moreover, this ignores the disturbance required on areas which will not be mined. More importantly, the analysis of this hypothetical case is improper in the EIS. The analysis should focus on the decision, which is to make over 9,000 acres available for leasing.

The RMP statement that bond release would come after reclamation is "successful", which would be "possibly 15 years", should be deleted. The 15 year period is simply a guess, and has no place here. The implication that reclamation will be successful is improper, since the plan does not even try to assess the feasibility of reclamation as required under FCLAA and section 522(b) of SMCRA.

210 The RMP objective is "to lease all suitable coal in which interest has been expressed; BLM will recommend to the RCT that "all coal in the Bull Mountain field which passed through the resource and environmental planning steps be considered as acceptable for further leasing consideration."

The "resource and environmental planning steps" mentioned should be described. How does this recommendation constitute "Low Level Management"?

The RMP then finds the coal to be acceptable for "leasing or exchange". The implication is that the decision to consider for leasing is equivalent to a decision to exchange. The two

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210 cont. processes differ greatly. It is not valid to simply assume, as the RMP does, that if given lands are suitable for leasing, them they are suitable for exchange.

Coal exchanges are a land tenure adjustment action, under section 206(a) of FLPMA (or, at least, so BLM has alledged with regard to the proposed BN-BLM exchange at Circle). Nothing in the Federal Coal Management Program or 43 CFR regulations provides for finding coal suitable for "leasing or exchange".

The RMP says that "(c)oal exchanges would be considered when it's in the public interest to 'block up' Federal mineral holdings."

When is it "in the public interest to block up federal mineral holdings"? How will this be determined? What specific steps would insure that the public will be involved in determining what criteria are used to make this determination, and in making this determination?

The RMP should note that Congress has found that exchanges with railroads such as Burlington Northern are never in the public interest, as noted in General Comments, above.

211 Page 26--As we have discussed, the RMP should contain a map specifically showing the areas found suitable for leasing pending further study.

Page 28--Figure 2.8: The RMP says that "final determination of Alluvial Valley Floors has not been made." Are the possible AVF areas being further considered for leasing, or not? If they are being considered, when will the final determination be made?

There is no discussion or description, anywhere in the plan, of how the unsuitability determinations displayed in this figure were made--whether any exceptions were applied, why they were applied, etc. A description of this process must be included in the plan.

212 Figure 2.8 lists 9,535 acres as "acceptable for further consideration" pending application of criteria #7 and criteria 9-15. When will the application of these criteria be done? What steps will be taken to insure adequate public involvement? Discussion of both of these points is required in the plan by 43 CFR3461.3-1(b)(1):

> The authorized officer shall make his (unsuitability) assessment on the best available data that can be obtained... the comprehensive land use plan or land use analysis shall include an indication of the adequacy and reliability of the data involved. Where either a criterion or exception...cannot be applied during the land use planning process because of inadequate or unreliable data, the plan or

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212 cont.

> analysis shall discuss the reasons therefor and disclose when (in) activity planning... the data needed to make an assessment with reasonable certainty would be generated... When those data are obtained, the authorized officer shall make public his assessment on the application of the criterion...and allow opportunity for public comment.

213 P. 29--Land Tenure Adjustment: "No sales or exchanges would be processed in the short or long-term."

This statement conflicts with the coal leasing recommendation to find the coal suitable for lease or exchange.

High Level Management Alternative

214 P. 31--Wildlife: As with the low level alternative, there should be a recommendation to complete the application of wildlife unsuitability criteria.

There is no discussion of any change in the recommendations for protection of wildlife in potential coal leasing areas. For example, an area could be declared unsuitable, instead of proposing merely to attach stipulations to a lease. It is unusual that BLM would ignore this, since the impact of leasing recommended in this alternative is significant to wildlife, and since such a change would help distinguish the high and low level coal leasing alternatives (which are otherwise indistinguishable).

215 P. 32--Coal Leasing: the RMP says

> Coal leasing may be restricted where it conflicts with locally important resource values. The resource area would recommend to the Powder River Regional Coal Team that it give special consideration to any such values when designating and ranking coal tracts. These values include concern (sic) for productivity of agricultural land, groundwater resources and prevailing social and economic conditions. These considerations when applied during activity planning, could result in less acreage being offered for lease than in the Low Level Management Alternative.

The restrictions on coal leasing discussed here are all supposed to be applied during land use planning, under the law, regulations, and BLM's own description of the process in this RMP. There is no mention (here or elsewhere in the RMP) of what specific values would

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215 cont. be recommended to the RCT for special consideration. (If these are only meant to be considered generally, and no specific resources or values on any particular piece of land are referred to, the recommendation is meaningless--NEPA already requires such consideration, and the RCT has repeatedly pledged to take such values into consideration.)

How would "less acreage" be considered for lease? What specific acreage is being recommended to the RCT for special consideration? The description here should be expanded, to indicate more clearly how the "High Level Management" alternative differs from "Low Level" management.

If there are any concrete differences, or any specific suggestions to be made to the Regional Coal Team, they should be listed and analyzed here in the plan (43 CFR 3420.1-4(a)).

216 The High Level Management Alternative again recommends coal lease exchanges "when it's in the public interest." When are exchanges in the public interest? "Blocking up" federal coal is not a reason to exchange under the federal coal management program. Coal exchanges under that program are exchanges specifically authorized by Congress, or exchanges to compensate lessees who were denied the right to develop because of environmentally sensitive areas, or under the alluvial valley floor exchange program. There is no authorization for BLM to exchange to "block up" coal for federal coal management purposes.

Both the Low and High management alternatives which say that coal exchanges will be considered conflict with the State Director's decision of March 6, 1982, that no other coal exchanges will be encouraged while the proposed Meridian Exchange is being processed.

217 P. 33--Land Tenure Adjustment: The RMP says that "(p)riority consideration would be given to exchange proposals...which... may expedite future mineral development."

There is absolutely no foundation for this part of the recommendation in FLPMA. It is not a policy objective in FLPMA (and all exchanges must meet some FLPMA policy objective). It is not listed in the law, or in exchange regulations, as one of the criteria for an exchange. Moreover, BLM has no policy, guidelines, or criteria for determining which (if any) mineral exchanges might "expedite future mineral development." Given this, it is inappropriate to give "priority consideration" to such exchanges.

What is the effect of giving "priority consideration" to an exchange proposal in the planning process?

218 The RMP says that more acreage than is recommended for disposal in the document would be available for disposal in the "long term" under section 203(a) of FLPMA, and lists the criteria from the law which allow disposal.

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218 cont. Significantly, the RMP omits from its quotation from FLPMA that section 203(a) of FLPMA allows disposal only if the criteria are found to apply to a parcel of land "as a result of land use planning required under section 202 of this Act." BLM may not dispose of land under section 203(a) criteria unless that land is studied and the section 203(a) criteria applied in this land use plan.

The High Level Management Alternative also says

> Lands which have been placed in the further study category and public land outside of the Land Tenure Adjustment Area would be evaluated using criteria defined in the Land Pattern Review and Adjustment Project Management Plan developed by the Montana State BLM office after the completion of this RMP.

219 How would these lands be evaluated "after completion" of the RMP? As noted above, this can only be through a full plan amendment meeting all of the requirements of section 202 of FLPMA and the planning regulations for amendments. The evaluation method for these lands should be clearly spelled out in the plan.

Preferred Level of Management Alternative

220 There is no explanation of why any alternative for any resource was selected as the preferred alternative, an inexplicable omission from the RMP/EIS. WPRC is particularly curious about why the High Level Management Alternative was selected instead of the Existing Management Alternative for coal leasing and "land tenure adjustment."

221 P. 40--Table 2.5, Summary of data for the Four Alternatives: Footnote 1 says that

> unless the coal lease acreage is increased, at the present production levels the company will exhaust the coal reserve within the leasehold within 2-4 years.

Accordingly, under the Existing Management column in the table, annual production drops to "0" in the long term.

However, the Existing Management alternative includes a recommendation to lease coal to keep this mine operating (see Draft, p. 17).

Data on the acreage found unsuitable and suitable under the various alternatives should be included in the table.

222 P. 41--Table 2.5, continued: There are no data given for the land not within the tenure adjustment area. Are these lands recommended in the plan for further study? For Retention?

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222 cont. For exchange or disposal? If they are recommended for further study, how will that study be carried out?
Obviously, section 102(a) of FLPMA requires that these lands be recommended for retention, since they have not been recommended for disposal in a comprehensive land use plan.

Summary of Environmental Consequences by Alternative

223 P. 44--Continuation of Existing Management Alternative, Coal Leasing: the summary should include the acreage that would be leased to maintain production at existing mines.

224 Low Level Management Alternative: The summary should include a discussion of the impact of leasing and development on ecological range condition, native vegetation, watershed, hunting and fishing, cultural sites, ranch income and operating expenses, and socioeconomic impacts. The only impact of coal leasing mentioned is that there would be "harrassment and relocation" of wildlife . This statement clearly understates the impact, and is not supported by sufficient evidence in the rest of the RMP/EIS.

P. 45--High Level Management Alternative: Again, the summary should include a discussion of the impact of leasing and development. Here, for some reason, there is no mention of the impacts of mining on wildlife.

225 Under Land Tenure Adjustment, the summary of impacts indicates that approximately 9,000 acres of Federal land in the area would be disposed of, and that this figure is insignificant compared to the entire resource area.
For some reason, the summary fails to estimate the impacts of "Land Tenure Adjustment" on land ownership patterns outside the adjustment area, though such adjustment is recommended in this alternative. That represents over 90% of the planning area, and BLM has made no attempt to analyze the impacts of its decision here.
Within the adjustment area, nearly 30% of all federal lands are proposed for adjustment, and over 14% are proposed for sale. That is, clearly, a significant portion of the land under BLM management.

226 P. 46--cultural sites: The RMP says that impacts to 68 cultural sites would be "insignificant due to mitigation." It is difficult to understand what this means or what BLM is proposing here when the mitigation referred to and the sites in question are not discussed in the RMP. The specific mitigation proposals must be discussed and evaluated in the plan.

227 The only impact of disposal of the public lands which BLM identifies in this summary, and which BLM considers to be significant, is on the psyche of groups favoring or opposing disposal (p. 46, col. 2, paragraph #9).

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NPRC Comments
Billings Resource Area RMP
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227 cont. This should be a signal to BLM that its analysis of the environmental consequences of disposal was too superficial. One way to mitigate this impact would be to include a tract by tract analysis of the impacts of disposal for each parcel of land proposed for sale.

Preferred Level of Management

228 P. 47: There is no discussion of the impacts of coal leasing and development on range condition, native vegetation, wildlife habitat, watershed conditions, hunting opportunities in the Bull Mountains (recreation), or visual resources.

229 The summary mentions 61 cultural sites that may be impacted. If the reader is to get any significance from this figure, the RMP should discuss the completeness of the inventory that has been used in determining this figure. As far as NPRC is aware, this inventory has not been done at all for the 9,000 acres recommended for lease.

CHAPTER III--AFFECTED ENVIRONMENT

230 P. 53--Air Quality: The Draft says that Billings and Laurel are not Class II because they are non-attainment areas. They are still Class II, whether they are non-attainment areas or not.

231 P. 58--Energy Minerals: The Draft says that there has been "surprisingly little" development in the Bull Mountain coal fields. Why is this considered surprising?

232 The RMP says that "Meridian Land and Minerals (a wholly owned subsidiary of Burlington-Northern) has expressed interest in exchanging Federal coal rights for Burlington-Northern coal rights in order to create two blocks of coal..."
The nature of the "expression" by BN should be clarified and described fully here. The Draft should also note that Congress has expressed opposition to the commingling of transportation and mining of coal by railroads like BN, and that such an exchange could, therefore, never be in the public interest.
The discussion of Louisiana Land and Exploration should note that the company has pulled out of the area. The statement, that the company had determined that development was economically unfeasible, indicates that the coal is not of much value, and that there is no need to lease in the area.

233 P. 68--Groundwater: It is apparent from the discussion here that very little information and data exists. The Draft mentions a study by the Bureau of Mines for BLM. When will

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233 cont. this study be completed? Will there be an opportunity for public review and comment? How can the decision be made to lease this area without such pertinent data on water quality?

234 P. 75--Wildlife: The RMP should make clear whether the 61,800 acres of muledeer winter range "on public land" includes water range over federal coal estate. The same comment applies to the discussions of antelope habitat (p. 76), Elk habitat (p. 76), sage grouse and sharptail habitat, and Turkey habitat (pp. 76-77). This is especially important for Elk. It appears that the public land figure (1%) could not possibly include Bull Mountain Elk habitat over federal coal. This would be an incorrect calculation, since the definition of federal lands includes lands where BLM manages only the mineral estate.

235 P. 77--Threatened and endangered species: Has BLM done an inventory for threatened and endangered species in the areas recommended for coal leasing?

236 P. 80--Visual Resources: the inventory for visual resources was not completed for the entire area. Was it finished for any or all of the areas recommended for lease? What were the results, if any?

237 Cultural Resources: It is clear that no inventory has been done for cultural resources in the Bull Mountain coal fields. This should be clearly stated. The conclusions, which are based on extrapolations and guesses, seem to be expressed with a greater degree of confidence than is warranted.
What is the distribution of prehistoric sites in the Bull Mountains (Table 3.11)?

Social and Economic Conditions

238 P. 108--The discussion of "ranch related economic conditions" mentions 43 ranches that would be affected by this plan. All are those with grazing allotments.
BLM completely fails to recognize that federal coal leasing and development affects ranches (whether over coal to be leased, or nearby) just as surely as a cut in grazing allotments affects ranches.

239 P. 109--General and Issue Related Attitudes: The Draft says that "there is support for the leasing and development of coal in the resource area if the coal is needed and developed in a careful manner..."
The source for this broad generalization should be cited. Who determines "if the coal is needed"? Do the sources for the above generalization indicate whether people in the area think that the coal is needed, or whether they think coal can be developed in the Bull Mountains in a "reasonable manner"?

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240 P. 110--The Draft says that the "exact extent" of opposition to mining in the Bull Mountains is "unknown".
Isn't this also true about the extent of support for mining in the Bull Mountains?
The opposition is especially strong in the coal field itself, as indicated by the surface owner consultation process.

241 P. 111--The Final RMP should include, in its discussion of attitudes towards land tenure adjustment, the opinions expressed at the hearing on the Draft, and the resolutions of the Western Governors' Conference and the Montana Legislature. It should also include the opinions of the Montana Congressional delegation.

CHAPTER IV--ENVIRONMENTAL CONSEQUENCES

Introduction: Here, the RMP indicates that the areas outside the land tenure adjustment area will be evaluated in "a separate environmental assessment" and the results included in "a final environmental impact statement (EIS) supplement".

242 What kind of procedure is being proposed here? To what will the final EIS supplement be a supplement? What kind of public involvement procedures will be followed for the environmental analysis? for the EIS supplement? How will FLPMA's specific requirements for land use planning be met? This whole discussion is extremely confusing, and seems to indicate that BLM will follow a procedure that will insure neither adequate public involvement or the legality of its program.

243 The introduction also says that "the impact discussions relate only to public lands and only those actions or proposals which impact specific resources are discussed."
This is a violation of 1601.0-8 of BLM's planning regulations, already quoted in the General Comments, above. It also violates the spirit and several specific provisions of NEPA regulations.

244 Assumptions: The RMP assumes that unsuitability criteria would be applied before any alternative is considered.
The RMP considers several alternatives, and the criteria have not yet been applied. If the Draft is supposed to indicate here that the criteria would be applied before an EIS is prepared on a lease sale, the assumption is contradicted by the record of both the Powder River and Fort Union coal lease sales.

Impacts to Resources

245 P. 115--Soils/Watershed: Impacts of coal leasing: the draft says that there will be "short-term" increases in erosion, but no long term problems because of SMCRA.
Why doesn't SMCRA prevent short term problems? As explained above, the existence of a law is not a substitute for thorough analysis, specific mitigation proposals, and

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245 cont.

other NEPA and FLPMA requirements for analysis.

Moreover, the analysis here directly contradicts BLM's previous findings in the Land Use Recommendations (1974):

> Another adverse characteristic of the Mammoth-Rehder bed is that the band of strippable coal which encircles the Bull Mountains lies completely perpendicular to the major drainage pattern. The Bull Mountains can be described as the hub of a wheel with a labyrinth of sharply inclined drainage flowing out from the hub. It would be impossible to restore the drainage patterns and slopes to their original form. Erosion processes would be so disturbed as to defy an accurate prediction of the ultimate effects. (Emphasis supplied.)

246

P. 116 -Groundwater: It is difficult to believe that BLM can predict minimal impacts to groundwater with the confidence displayed here given the admission elsewhere in the EIS that it doesn't even know whether or not the coal is an aquifer, and that a groundwater study providing the most basic data is still being conducted. Again, the analysis here (especially the confidence of the conclusions) conflicts with BLM's 1973 findings.

What is the source for the natural flow rate of groundwater given here? Even accepting the figure of 0.1 feet per day, this water will have moved over 120 yards within 10 years. What will be the effect of this movement on other ranches, outside the mining area?

In 1973, BLM concluded that

> Strong evidence exists that water sources (aquifers) are associated with the coal beds. Virtually nothing is known about the impact stripmining would have on the aquifers.

In 1983, with no new data, BLM has concluded:

> "long term consequences of coal mining on water quantity and quality would be insignificant.

What is the source of this new-found confidence? What happened to the "strong evidence" that coal beds were aquifers?

The Draft also says that "the impacts on groundwater quantity and quality would occur under all alternative courses of action.

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246 cont.

The statement is meaningless. Under the proposed action the scale of impacts would be substantially [illegible] compared to the existing management alternative and [illegible] would be impacted. This [illegible] the significance of the [illegible] the Bull Mountains.

247

P. 119--Wildlife: the Draft says that habitat would be destroyed by mining, and that "total restoration is not [illegible]. What will be achieved? The difficulty of restoring the Ponderosa Pine habitat, which is the type in question, suggests that "total" restoration is very unlikely, and that the impact on habitat may extend well beyond the mine itself.

The Draft continues to say that "the areas that are reclaimed would have the potential to produce more desirable spring and summer range for big game."

What is the basis for this statement? What happens to fall and winter range for big game? What happens to small game and non-game wildlife?

Finally, the Draft says that "there would also be movement of wildlife species to more desirable habitats caused by the movement of equipment and transportation of coal."

This statement is incredible. What habitat is more desirable" to wildlife than that which they are currently inhabiting? By what mechanism will the species in question be moved--on unit trains?

248

P. 120--Aquatic Wildlife: The entire discussion here is predicated on the assumption that the existence of SMCRA mitigates impacts. It does not. The impact must be discussed, and the specific mitigation measures necessary analyzed here.

249

P. 121--Recreation: The Draft says that "there will be little impact to recreation from coal leasing because there is little federal surface over coal." Well.

Does BLM mean to say that "there is no recreation except" on BLM land? If BLM is referring only to public land recreation, it is ignoring its obligation under NEPA and 1501.6 of its own regulations.

250

P. 122 -Cultural Resources: [illegible] The Draft fails to analyze the impact of coal leasing on these resources.

Existing Management Alternative

251

P. 124--Soils/Watershed (Erosion): Is there really no impact from the existing level of mining on watershed or soils?

Low Level Management Alternative

252

P. 133-134--Soils/Watershed (Erosion and Water Quality): As

15-21

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252 cont.

noted in other areas, BLM's attempt to limit mitigation discussions to citing SMCRA is wholly inadequate. There is no discussion of the effect of mining on the soil itself, although such effects are well documented. There is also no discussion whatever of the soil types in the area to be proposed for mining.

P. 135--Vegetation: The entire analysis of the impacts of mining on vegetation in the Draft is as follows:

> Coal mining would disturb approximately [illegible] acres annually. Reclamation would be in accordance with the mining and reclamation plan developed under the authority of SMCRA. However, there is a concern for the replacement of ponderosa pine in mined areas.

253

The last sentence is a non sequitur, and would be ambiguous in its proper context. The second sentence is irrelevant to environmental analysis. The first statement is innacurate. Here, and in other places in the Draft, the analysis is based on one or more "scenarios" which are purely hypothetical, rather than on the worst case based on the decision in the RMP. The decision is to offer more than 9,000 acres for lease. The analysis must therefore be predicated on direct disturbance of more than 200 acres per year. Indirect disturbance would probably be that much or more, according to BLM's 1973 document.

254

P. 136- Wildlife: "If coal lies under 5,700 acres of Elk winter range and 22,000 acres of mule deer and Turkey habitat, why are only 65 acres affected by leasing?

The discussion should include an indication of the level of confidence in the data. Since no inventory for unsuitability criteria was done prior to preparation of the Draft, the discussion should also include an analysis of the impacts to wildlife outside the mine. Mining in the Bull Mountains obviously divides habitat higher in [illegible] and other habitat down below. How will mining affect migration routes? The Draft does say that there would be additional impacts from problems such as [illegible] but does not specify the problems, how many acres would be affected, or whether the impact would be significant.

255

P. 140 -Attitudes Toward the Alternatives: The Draft says "the absence of environmental, economic and social planning steps in determining the land to be made available for coal leasing" would cause opposition to this alternative. What steps are proposed for elimination here? What steps could be eliminated legally, that have not already been eliminated from the planning and leasing process? The statement is very confusing and indicates that this is not a "real" alternative.

15-22

NPRC Comments
Billings Resource Area RMP
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255 cont.

Rather, it appears that the "Low Level" and "High Level" Management Alternatives are identical in regard to coal leasing.

256

P. 144--Economics: The Draft discusses the impacts of strip mining on farms and ranches on the basis of 21 acres mined per year. As noted above, the figure should be based on the acres found suitable for further consideration for leasing, and a 10 year mining period.

The costs to farms and ranches are also based on an arbitrary assumption, that the land will be fully reclaimed and returned to the market for productive use in 15 years. If the figure is to be used, it should be supported by reasoned argument and evidence from a similar mining area where this has occurred.

The assessment also assumes fully successful reclamation (and no loss of productivity), which is not yet proven in the Northern Great Plains, and is even less likely in the Bull Mountains.

The assessment ignores all offsite impacts, as noted above: it ignores all losses due to groundwater degradation, both on and outside the mining area; and it ignores all the costs of severance of a ranch. It assumes that a rancher has access to land the minute it is reclaimed, and has access to the land up until the minute the overburden is first moved. It ignores the impacts of all associated facilities.

The Draft then makes the extremely dubious comparison of the income lost (as minimized by all of the analytical shortcomings listed above) to the county wide agricultural income. The significance to the rancher in question is minimal. It is not much more helpful to the reader.

Instead, BLM should analyze the impacts of coal leasing on ranchers just as it analyzes the impacts of cuts in grazing allotments on ranchers (Appendix 3.9).

The Draft also discusses the effects of some of the indirect impacts, but says they occur only when mine development is located near the center of a ranch. Most of these impacts occur and impact landowners who are totally outside the lease and permit area, too. These landowners have no method of receiving compensation.

257

High Level Management. The planning steps that BLM would remove from the Low Level Alternative are mentioned again here, but they are still not described. What steps will be taken here that would not under the other alternative? If they are significant, why is there no difference at all between the impacts of coal leasing under the two alternatives?

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16-1

MONTANA WILDERNESS ASSOCIATION

June 28, 1983

Mike Penfold
State Director
Bureau of Land Management
P.O. Box 30157
Billings, MT 59107

Dear Mike:

I wish to offer the following comments on the draft Environmental Impact Statement for the Billings Resource Area Management Plan.

258 In general, the document is well-organized, well-written and easy to follow. My only comment in terms of presentation is that a good color-coded map of each of the four alternatives should have been included in the packet. The maps that were presented were very helpful.

Each of the four alternatives have some strong and weak features but our general preference is for #3--the High Level Management Alternative.

The Montana Wilderness Association (MWA) strongly supports wilderness designation of the two Wilderness Study Areas (WSA's) and also for the two "Wilderness Study Units" within the Billings Resource Area.

259 1) TWIN COULEE--since the beginning of the BLM Wilderness Review Program I have taken two field tours in this area and I can personally attest to its' high degree of wilderness suitability. The country is completely remote, wild and undeveloped offering more absolute solitude than most classified wildernesses. In terms of wilderness, Twin Coulee could actually stand on its' own. However, its' wilderness value is greatly enhanced by the fact that it is part of a contiguous roadless area of more than 130,000 acres--most of which are included in the 98,000+ acre Big Snowies Wilderness Study Area managed by the Forest Service.

The Montana conservation community has long advocated a Big Snowies Wilderness but the actual proposal really took shape when the Forest Service refused to designate the wild Big Snowies as a "New Study Area" during the 1971-73 RARE process. As a result, the Big Snowies became the subject of enough citizen support to where it eventually became one of 9 carefully-selected priority national forest roadless areas included in the late Senator Lee Metcalf's Montana Wilderness Study Act which was passed in 1977.

During the Carter Administration the Forest Service recommended a 75,000 acre Big Snowies Wilderness but later reversed itself with a negative nonwilderness recommendation in the draft Big Snowies Wilderness Study released last year by the Lewis & Clark Forest. Sadly, this Forest Service nonwilderness recommendation seems to have triggered a BLM nonwilderness recommendation for Twin Coulee.

260 I am assure you that the MWA will continue to work toward a Big Snowies Wilderness with the inclusion of Twin Coulee and it would sure be helpful if we had the backing of BLM. We urge you to adopt a wilderness proposal for Twin Coulee in the final Billings RMP. I am enclosing a copy of my statement in support of a Big Snowies Wilderness which I presented at the Forest Service hearing last December. Please note that this statement includes our rationale for a Big Snowies Wilderness which

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2110 Bradbrook Court
Billings, Montana 59102

July 6, 1983

Mr. Mike Penfold, State Director
Bureau of Land Management
P. O. Box 30157
Billings, Montana 59107

Dear Sir:

You have my letter of July 6, 1983, containing comment upon the draft EIS for the Billings Resource Area Management Plan. I overlooked a comment. Please add the following:

265 There is some BLM land at Big Lake, Stillwater County. The Montana Department of Fish, Wildlife & Parks and the U. S. Fish and Wildlife Service are both interested in the possibility of putting together a wildlife area at this location. I suggest the BLM land either be traded to the appropriate wildlife agency (preferably the state) or otherwise be retained and managed in conjunction with their wildlife management efforts.

Very truly yours,

MONTANA AUDUBON COUNCIL
Public Lands Chair

cc: Lewistown District Office, BLM
Billings Area Office, BLM
President, Montana Audubon Council

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Penfold
1983—page two

applies equally to Twin Coulee. In this statement we are also challenging the adequacy of the Forest Service study and nonwilderness assumptions.

261 2) PRYOR MOUNTAINS--The MWA strongly supports the two recommended BLM wilderness additions in the Pryors: Pryor Mountains WSA (MT-067-106) and the Burnt Timber Canyon "WSU" (MT-067-205). In addition, we feel that the two Big Horn Tack-On units (MT-067-207) should also be included in the wilderness proposal. This is even more appropriate in that the likely possibility of wilderness management of the adjacent National Park Service Big Horn Canyon NRA wild country would allow wilderness contiguity throughout the Pryor Mountains Wilderness complex. The Pryors are hard to beat in terms of solitude and wild, rugged canyon country.

262 We would like very much to see a comprehensive three-agency Pryor Mountains Wilderness jointly administered by the BLM, Forest Service and NPS. We have before us an opportunity to preserve an enduring Pryors Wilderness of nearly 40,000 acres which could serve as a model for interagency cooperation and for the development of innovative wilderness management techniques.

In order to realize this potential we strongly recommend that BLM and the State of Montana execute a land exchange so that the two state sections (one in the Froggs Fault Cave area and the other strategically located between the two Big Horn Tack-On units) can be acquired and administered by BLM as part of the Pryor Mountains Wilderness.

263 The discredited "sights and sounds" argument and supposed lack of solitude appears in the draft EIS as arguments against wilderness for the Big Horn Tack-Ons. These worn-out arguments are not valid in this case; particularly since the NPS is now leaning toward a wilderness recommendation for its' WSA which is even closer to the Bad Pass Highway. The obscure vehicle ways and other manmade features within the Big Horn Tack-On WSA do not significantly detract from the high overall naturalness of the area.

264 In conclusion, the MWA strongly opposes any sale of BLM public lands (Asset "management") unless the land truly has "no public value"--a finding that would be hard for us to accept on the basis of wildlife habitat and public recreational access alone. However, we are well aware of the scattered nature of BLM land holdings in the Billings Resource Area and we recognize the need for some land adjustment. All of the scattered tracts that might be sold are better retained in public ownership as potential "trading stock" for the consolidation of BLM lands elsewhere. Such an approach is especially appropriate as funds for direct land purchase become increasingly scarce.

I've appreciated the opportunity to comment on the Billings RMP and I look forward to receiving the final document. Thank you for your review and consideration of our concerns.

Sincerely,

Bill Cunningham
Conservation Director

cc: Glenn Freeman
Enlc.

17-2

2110 Bradbrook Court
Billings, Montana 59102

July 5, 1983

Mr. Mike Penfold, State Director
Bureau of Land Management
P. O. Box 30157
Billings, Montana 59107

Dear Sir:

Please accept this letter as my comment upon the draft Environmental Impact Statement (EIS) for the Billings Resource Area Management Plan. Hopefully, what I have to say will be meaningful and have merit.

266 I oppose sale of BLM lands (the "asset management program") unless there can be shown (1) the land has "no public value" or (2) there truly is a "higher and better use" for a particular parcel. As the legislator states, let me explain: To find "no public value" for a parcel will be hard for me to accept, in most cases I know about, on the basis of wildlife needs and/or public recreational wants. I am aware that much of the Billings Resource Area BLM land is in scattered parcels. This does create administrative problems. But I do not believe disposal as such is the necessary answer. Concerning "higher and better use" I do not want the BLM exchanging land in such manner that the resultant block can then be plowed up by a "sodbuster." There is too much of that now; apparently the lessons of the 1930s are forgotten. But neither should BLM land always be retained--here we have to depend upon the land managers and the policy makers. Unfortunately the present policy makers come across as "give-away artists."

268 I do support exchange. Public land managers can do much here that will benefit not only the public but the private land owner. Economic considerations should not be the only criteria. Wildlife is important. Recreation is important.

As an example of a particular problem, there is the intermingling of public and private land north of Billings adjacent to Highway 87. Public use is heavy and not always the kind desired. My personal observations are buttressed by information from the Montana Department of Fish, Wildlife and Parks: this area is important for antelope, sharp-tails, and sage grouse. The dominant landowner has made statements--and I can't disagree--that the use and misuse by the public is very hard on his operations, yet the land in his view is very necessary for him. Now can we find a solution? One might be to fence the BLM land as his own--as state land is now if a lessee wishes--against access. But with a stipulation: do not change present land use. Thus the wildlife will still be able to use the area, too. True, public access will be barred, but perhaps we can work out some other trades to meet that need.

270 I am not so sure that some of the smaller public inholdings in private land shouldn't be just "used for free" by the surrounding landowner, as long as he doesn't change the present uses of the land--in other words, don't plow it up, and hopefully don't overgraze it. Just how many "small tracts" per square mile section or however rule-of-thumb we'd have to come up with does remain a question!

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Billings Resource Area
Comment - page 2
July 5, 1983

271 Under no circumstances should BLM dispose of river front or river islands. Such habitat for wildlife, termed "riparian," is in short enough supply in Montana as it is. Much of what there is has been abused. Selected river front is important for stream access as well.

I support for wilderness designation the two wilderness study areas (WSAs) and the two wilderness study "units."

272 The recommendations for Twin Coulee (MT-067-212) and Pryor Mountain (MT-067-206) are in agreement with the "High-Level Alternative." Twin Coulee is good enough to be wilderness by itself, but the possibilities are admittedly much greater if the Forest Service Big Snowies WSA is also made wilderness. The BLM should have shown its independence of the Forest Service by standing for wilderness for Twin Coulee even though the Forest Service backtracked on its former position for the Big Snowies Wilderness.

273 The National Parks Service, the Forest Service, and the Bureau of Land Management should all be encouraged to work towards a Pryor Mountain protected complex. The boundaries are "paper" boundaries really. Our feeling is the BLM and the State of Montana exchange for the two state sections (one between the two Big Horn "tack-on" "units" and the other in the vicinity of the Froggs Fault Cave); thus the BLM will then be able to administer the Pryor Mountain Wilderness as it should.

As to the remainder of the document, realistically I support the "preferred level of management" alternative. While one might wish for "high-level management" alternative, one has to consider the funds and people available. And almost daily "ground rules" are being modified. What the proposed changes in grazing regulations will be or "clarifications" of policy may be can only be guessed at. Further changes may declare the whole "EIS" redundant.

274 Billings is a city increasing in population with each passing day. Isolated tracts in such circumstances are important to wildlife as well as to recreation. The countryman goes to town; the cityman takes to the open spaces. Perhaps we should not dispose of any parcels of land adjacent or near Billings. We are, too, continually amazed at the land being put up for subdivision. BLM land policy should be aimed to do what can be done to channel this where wildlife and recreation values are low or not in conflict.

These comments are in addition to and supplementing the testimony of Georgia Frazier, President, Yellowstone Valley Audubon Society, at the hearing held at Billings, June 1, 1983.

James Phillips
MONTANA AUDUBON COUNCIL
Public Lands Chair

cc: Lewistown District Office, BLM
Billings Area Office, BLM
President, Montana Audubon Council

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Defenders OF WILDLIFE

Billings Resource Area comments--page two

278 Next, it was impossible to deduce from the plan the particular management actions that would be taken to improve resource conditions. This is particularly disturbing, given that the BLM predicts a 30% increase in AUMs is possible for an area that has so much land in unsatisfactory condition. One might normally suspect we would see a deadline in AUMs given the existing range conditions; if increases are indeed justified, the BLM needs to explain as specifically as possible how this will be accomplished without compromising other resources.

The limited range of alternatives in the plan also keeps the reader from fully comprehending the different ways the public lands in the Billings Resource Area might be managed. The differences between the high level management alternative and the preferred alternative are really rather minor, particularly when you look at the cost calculations of range improvements and vegetation manipulation; they're almost identical.

279 Given the BLM budget problems (if Congress approves the Administration's budget request for FY '84, funds for the Range Management Division will have been reduced by nearly 40% since 1981), one can reasonably question whether the BLM can reasonably adopt a preferred alternative that would cost three times as much (budget for the existing program is $321,000 as compared to $995,000 for the preferred alternative). It would only seem reasonable for the BLM to formulate a low-budget alternative that meets resource objectives. The low level management alternative presented in the DEIS takes this concept to an extreme, and thus doesn't really provide a meaningful option.

280 At the same time, the DEIS never really presents the economic analysis to tell the public whether the massive investment of taxpayer dollars proposed in the preferred alternative is really worth it. In other words, the BLM makes no attempt to identify those areas that can produce livestock well, just as there's no attempt to identify which lands will produce good wildlife populations. Consequently, there's no opportunity for the public to weigh and balance competing resource uses. The BLM's solution to the problem as presented in this DEIS is simply to allocate as much forage to livestock as possible, on the misguided assumption that if the range is improved for livestock, it will also be improved for wildlife. The range may be in good or excellent condition, but if the livestock are removing 50% or more of the vegetation (and certainly it will be more in riparian areas), wildlife isn't receiving any of the benefit of that good range condition. This grazing document fails to establish any targets or objectives for wildlife habitat--it's geared totally toward maintaining range condition and allocating AUMs to livestock. As far as I can tell, there's been no effort to allocate AUMs to wildlife. But if 50% is allocated to cattle, on the basis that's how much the plants can sustain without deterioration, excessive wildlife usage will reduce the condition of the range, while reducing habitat quality for those species that need more ground cover for nesting, security or thermal cover.

281 Unlike other management plans I have read, the Billings Resource Area DEIS idea of wildlife management seems limited to building duck boxes or constructing fish ponds. There's very little effort to integrate the grazing, mining and logging plans with a wildlife plan; there's even little acknowledgement about what impacts these programs might have on wildlife.

282 Regarding the sagebrush burning, for instance, one might logically assume that if 12% of the federally managed antelope winter range and 2% of the sage grouse mating and nesting areas were destroyed, it might have some impact on populations (page 149). But on page 151 we're told wildlife habitat conditions would improve for upland birds and antelope. These seemingly contradictory statements aren't explained.

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Defenders OF WILDLIFE

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July 14, 1983

Mike Pemfold, State Director
Bureau of Land Management
Box 30157
Billings, MT 59107

Dear Mike,

Please consider the following comments on behalf of Defenders of Wildlife regarding the draft Environmental Impact Statement (Resource Management Plan) for the Billings Resource Area.

I'd like to start by saying I recently reviewed the Headwaters Resource Area draft plan, and there's absolutely no comparison between the Headwaters Plan and the Billings Plan. The Billings Plan is utterly lacking in site-specific information, it's poorly organized and hard to follow, and lacks the in-depth analysis that might allow citizens to make reasoned decisions about how their public lands should be managed. Even though I may not have agreed with some of the conclusions of the Headwaters Plan, there were coherent reasons presented for the preferred alternative. The conclusion of the Billings Plan--that AUM's can 275 be increased by 30% and conditions will improve for wildlife--given the current condition of the range and recent BLM budget levels, seems like an excursion into fantasy land.

The document begins by telling us the lands in the Billings Resource Area have a high erosion hazard, due to a variety of reasons. We're also told that more than 40% of the land is in fair or poor condition, not counting the Pryor Mountain Wild Horse Range, which is in rather bad shape itself. Although the plan tells us nothing about the condition of riparian vegetation, one might well assume that given the lack of active management a great deal of riparian vegetation is in unsatisfactory condition as well. We're also told that the potential for improving much of the rangeland isn't high (pg. 71). All in all, the picture presented isn't good, although in all fairness it's really hard to assess because of the lack of information. 276 The document presents no information on the condition or relative abundance of key types of wildlife habitat, nor does the plan identify specifically that any of the public lands contain outstanding wildlife values. The reader is left with no concept of how these lands fit in with bordering public and private lands, and what their relative importance might be.

277 The plan is so generalized that it's difficult to provide meaningful comments. For instance, there's no table that would tell the reader the condition of wildlife habitat on an allotment-by-allotment basis, and what improvements should be made. I found the table that displayed this in the Headwaters Plan extremely useful. I was also unable to find in the appendix any table that showed proposed changes in stocking rates on an allotment basis. In short, a casual reader of this plan is unable to tell what parts of the Billings Resource Area have problems, and exactly what the Bureau is doing to correct the problems. Citizens are asked to take it on faith that needed changes will be implemented.

1244 NINETEENTH STREET, NW • WASHINGTON, DC 20036 • (202) 659-9510

18-3

Defenders OF WILDLIFE

Billings Resource Area comments--page three

284 Similarly, the DEIS predicts benefits from logging activities in the Billings Resource Area, as if there were a dense forest canopy like in parts of western Montana. The plan doesn't consider that these areas may be important to wildlife for security areas, thermal cover, or sheer diversity.

285 One of the bright spots in the plan was the wilderness recommendation in the preferred alternative for the Pryor Mountain and Burnt Timber Canyon areas. Both are certainly suitable and meritous of such a designation. The Twin Coulee area also deserves such a recommendation; even if it is not managed as wilderness, its roadless values should be maintained.

286 Regarding disposal of BLM lands in the Billings Resource Area, Defenders of Wildlife believes actual land sales should be kept at an extremely low level, and the emphasis instead should be on land exchanges and trades that promote recreational opportunity and protect wildlife habitat. It's crucial, given the lack of federal funds to buy land, that the BLM doesn't sell those lands that might be used for possible exchange. Defenders of Wildlife also supports the site-specific comments on the asset management program submitted by the Montana Wildlife Federation.

In closing, I'd like to reiterate my view that the Billings Resource Area Management Plan is grossly inadequate for several reasons, and markedly inferior to earlier RMPs and grazing EISs. Its primary flaw is the lack of site-specific information that allows the reader to understand and make meaningful judgments about appropriate land management options. It's impossible for the reader to understand how the BLM gets from point A to point B, or in this case, from more than 40% of the Billings Resource Area in fair or poor condition to a 30% increase in AUMs. Further, the limited range of alternatives keeps the reader from understanding what the true range of management options might be, and hampers him from comparing one management option to another. Finally, this plan seems terribly out of line with anticipated funding levels for the BLM for the next several years. It fails to give the public a sense of where the best places to invest dwindling funds might be, yet these undoubtedly will be the kinds of choices the BLM will be making concerning these public lands over the next twenty years.

This is clearly the worst BLM grazing statement for Montana I've yet reviewed, and I would strongly recommend it be rewritten; as it stands, it marks a breakdown in the BLM planning process.

Sincerely,

Hank Fischer

HANK FISCHER, Montana Rep.
Defenders of Wildlife
1534 Helena Ave.
Missoula, MT 59801

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EDUCATION · CONSERVATION

Montana Wildlife Federation

AFFILIATE OF NATIONAL WILDLIFE FEDERATION

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ACTION	July 13, 1983		
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MR. MICHAEL PENFOLD, State Director
Bureau of Land Management
222 North 32nd Street
Box 30157
Billings, MT 69107

Dear Mike,

The Montana Wildlife Federation has reviewed the Resource Management Plan for the Billings Resource Area. As a general comment, we feel that wildlife and wildlife habitat is not given adequate consideration in the plan nor in any of the alternatives.

Wildlife considerations must be integrated into all decisions regarding the various resources administered by the BLM. Specific actions are suggested to enhance wildlife, such as constructing nesting sites, providing water catchments and conducting surveys and monitoring. While these are positive activities to enhance wildlife they are of minimal benefit by themselves. The real significant effects on wildlife occur as a result of the major decisions relating to other resources. Major decisions and day-to-day management actions with regard to livestock grazing, timber harvest, oil and gas development and coal mining greatly affect the wildlife resource, primarily through impacts on habitat. Also, agency decisions with regard to recreation, wilderness and roads can have important effects on wildlife.

287 The Plan devotes only general discussion to the effects of various resource decisions on other resource values. We believe that careful analysis should be made of the impact that any resource management decision will have on wildlife and wildlife habitat. All management decisions regarding grazing, timber harvest and mineral development should be made in consultation with wildlife biologists.

288 The Management Plan claims that deferring grazing during spring months will benefit wildlife. Spring deferment may help provide some spring forage for wildlife, but it is not an effective means of improving plant vigor and range conditions. Legitimate rest rotation systems keep livestock off a pasture for at least two full "green" seasons in order to optimize vegetative productivity.

Even where a plant management system is successful in improving or maximizing forage production, management decisions still must be made regarding how that forage will be allocated between livestock and wildlife. Acceptable grazing practices

THE WEALTH OF THE NATION IS IN ITS NATURAL RESOURCES

19-2

288 cont. which optimize plant and livestock production are not necessarily suitable for wildlife. Wildlife usually requires that a greater percentage of the vegetative cover be left then is necessary for livestock. Livestock grazing often adversely affects wildlife by reducing vegetation which serves as food and cover. In these situations wildlife is benefitted simply by reducing the number of livestock animal units.

289 Timber harvest is advocated as a means of enhancing wildlife by opening up timber areas and allowing understory vegetation (important as wildlife forage) to increase. Logging can be important in increasing wildlife forage in Western Montana where high levels of precipitation allow dense overstories which can restrict understory growth. However, on forests east of the Continental Divide, lack of forbs, shrubs and grasses is not a problem because the dry climate provides open timber stands in which understory plants grow readily. Available cover is the major big game concern on east slope forests rather than open areas for understory plants. Timber harvesting only aggravates the loss of security cover.

Wildlife is rarely benefitted by timber harvest within the Billings Resource Area. The real issue is to minimize the likely adverse impacts of logging on wildlife (primarily through loss of cover).

Recent elk-logging studies show that intrusion of security cover, both through loss of cover by logging and increased access because of road building into key big game areas. Roads and loss of cover allow heavy hunter harvest of bull elk to reach a level where the harvest may have to be reduced.

The Federation has genuine concerns about the "land tenure adjustment" program. As a general rule we don't believe disposal of public lands is in the best public interest. Lands held and administered by the BLM provide wildlife and recreation opportunities a well as right of access for the public.

290 Difficulty of administration is not a sufficient reason to dispose of public lands. The wildlife and recreation values of BLM lands must be made an overriding consideration, even for isolated and scattered tracts.

291 Any lands should be offered for disposal only after careful scrutiny, especially to identify wildlife values. The identity of specific tracts considered for disposal must be made available to the public and ample time provided for public review and comment.

292 Generally, MWF opposes land sales. Where disposal of BLM lands is truly in the public interest we favor land exchanges for private lands which have high public value.

293 BLM tracts which would be subdivided or would otherwise foster urban development must be retained. Public lands serve an extremely beneficial purpose as open space in the face of development pressures in urbanizing areas like Billings. Subdivision development brings many problems for both agriculture and wildlife.

294

19-3

295 Lands which would contribute to large scale cultivation, or "sod busting," also must be retained.

The Montana Willdife Federation appreciates the opportunity to comment on the Resource Management Plan. We strongly urge the Bureau to revise all proposed management alternatives to provide significant wildlife habitat protection, and to evaluate any resource decision in light of its impacts on wildlife.

Sincerely,

JIM E. RICHARD
President

cc: Mr. Jerry Jack

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MONTANA HISTORICAL SOCIETY

HISTORIC PRESERVATION OFFICE

225 NORTH ROBERTS STREET • (406) 449-4684 • HELENA, MONTANA 59601

RECEIVED BILLINGS RA NOV 6 '83

May 2, 1983

Glenn W. Freeman
District Manager
Lewistown District Office
Bureau of Land Management
Airport Road
Lewistown, MT 59547

Dear Mr. Freeman:

RE: Draft Environmental Impact Statement; Resource Management Plan Billings Resource Area.

296 Thank you for the opportunity to review the above-named document. In general I found the study easy to read and comprehensive. However, there are some areas I thought could be expanded in coverage. The Plan does not but should specify how sites would be evaluated for their eligibility for listing to the National Register of Historic Places and note whether or not the B.L.M. will pursue their ultimate nomination to the Register. It should also provide some estimate of the human and financial resources required to implement the cultural resource programs under each of the alternatives. The resource management plan should also include more specific information on how the identification, evaluation, and nomination of Billings Resource Area properties will occur in a timely manner under each of the alternatives (under contract to archaeologists outside the B.L.M. or by archaeologists employed directly by the B.L.M.; what lead time will be provided for the evaluation and analysis of sites found). Finally, I would like to see some discussion of whether the Management Plan will provide for the survey of unaffected portions of the Resource Area which have not been surveyed for the presence of cultural properties.

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Sincerely,

Marcella Sharfy
Deputy SHPO

TAF:md

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Bridger Environmental Education Program
Emily Stonington Director 15042 Kelly Canyon Road Bozeman Montana 59715

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July 14, 1983

State Director Michael Penfold
BLM Montana State Office
P.O. Box 30157
Billings, MT. 59107

Dear Mr. Penfold:

Bridger Environmental Education Program is a non-profit educational program serving the Gallatin Valley. We serve a population of approximately 40,000 and have an information network of approximately 7,000. B.E.E.P. is concerned about possible land sales as might be effected by the BLM Asset Management Program.

300 We would like to comment at this time about the Billings Resource Area Management plan and the individual tracts of land proposed for disposal in this resource area. We feel that wildlife habitat and overall use patterns should be studied as a whole rather than assuming that individual tracts isolated by private lands could be better managed in private hands. We want you to be certain that land assessments are made with public values in mind and not just administrative ease in managing the lands. We are concerned with public values beyond economic ones and feel that our lands have inestimable values in the public domain that must be carefully scrutinized before disposing of the land. We do advocate exchanging lands when possible to create blocks of public land that provide good wildlife habitat or public access to streams or other public values.

301

302 It seems apparent in the Billings management plan that wildlife values have not been considered in the context of other management areas. Extraction activities such as grazing oil and gas, timber and coal leasing have received higher priorities (o the great economy) while wildlife considerations have taken the leftovers. We feel that natural systems (i.e. wildlife) on our public lands are of great importance in the long term and should be managed with equal intensity to management of extraction activities. It would seem appropriate for the preferred alternative to identify at least a few areas supporting an above average wildlife resource and to give direction for some special management in these areas.

I want to thank you for your efforts in including the public in management plans for Montana. We do care, as I know you do,

21-2

about the fate of our public domain. I hope you can hear those of us who care a lot about some of the non-economic benefits of careful management and manage for us too. Ours' is th future for our planet, and we must continue to preserve it today.

Sincerely,

Emily Stonington

Emily Stonington
Director, B.E.E.P.

cc. Mr. Jerry Jack, Area Manager
Billings REsource Area
810 Main
Billings, MT. 59101

Congressman Pat Williams
Congressman Ron Marlenee
Senator John Melcher
Senator Max Baucus

22-1

Sierra Club
Yellowstone Basin Sierra Club Group
~~2905 Rimview Dr.~~, Billings, MT ~~59102~~
9433 N. 30th 59101

To explore, enjoy and preserve the nation's forests, waters, wildlife and wilderness.

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Department of Interior
BLM- Lewistown District
Billings Resource Area

Dear Sirs:

I have several comments regarding the draft EIS RMP for the Billings Resource area. The first and foremost is that there has not been sufficient

303 Time allowed to do an adequate evaluation. I would like, therefor, to formally request an additional 30-60 day period during which comments will be accepted.

We of the Yellowstone Basin group of the Sierra Club are opposed to any disposal of public lands at this time unless it can clearly be shown to be in the public interest.

304 That approximately 15% of the lands studied for land tenure adjustment is identified for disposal is unquestionably excessive and is unacceptable.

22-2

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Sierra Club
Yellowstone Basin Sierra Club Group
~~2905 Rimview Dr.~~, Billings, MT ~~59102~~
9433 N. 30th 59101

To explore, enjoy and preserve the nation's forests, waters, wildlife and wilderness.

305 In addition, difficulty of management seems generally inappropriate as a criterion for disposal.

We are generally opposed to ORV use on BLM lands. Specifically, due to numerous complaints from members and others about noise + dust pollution in the south Hills area near Billings,

306 we ask that all ORV activity in the South Hills be eliminated.

307 We recommend that the following WSAs be recommended for wilderness.

1. Twin Coulee 6,870 acres
2. Pryor Mountain 16,942 acres
3. Burnt Timber Canyon 3,955 acres
4. Bighorn Tack-on 4,550 acres

Note: in conversation with Homer Rease, superintendent of Bighorn Canyon NRA, he indicate that they would like the Bighorn Tack-on recommended for wilderness

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22-3

...To explore, enjoy and preserve the nation's forests, waters, wildlife and wilderness...

Sierra Club

Yellowstone Basin Sierra Club Group
~~2205 Stanton Dr., Billings, MT 59102~~
9432 N. 30th Billings, MT 59101

There are many more comments that need to be made, hence the request for additional time, and failure to comment further herein does in no way indicate acceptance or approval of the RMP as a whole.

Respectfully
Dayle R. Murphy
Chair
Yellowstone Basin Group
Sierra Club

23-2

Jerry Jack
July 13, 1983
Page 2

Meridian appreciates this opportunity to comment and hopes the BLM will give our recommendations serious considerations.

Sincerely,

Henry E. Reed
Vice President
Operations

1702I/Attachment

23-1

RECEIVED
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BLM

MERIDIAN LAND & MINERAL COMPANY
First Northwestern Bank Center
Post Office Box 2521
Billings, MT 59103-2521
406 256-4500

July 13, 1983

Jerry Jack
Bureau of Land Management
810 E. Main St.
Billings, MT 59105

Dear Jerry:

Meridian Land & Mineral Company is pleased to have this opportunity to comment on the Draft Resource Management Plan/Environmental Impact Statement (RMP hereafter) for the Billings Resource Area. Meridian finds the RMP is generally a very comprehensive and well-written document. The alternatives address the issues raised; the environmental consequences of each alternative are addressed; and the preferred alternatives represent a fairly balanced choice. It appears that in most all cases, the fundamental requirements for an RMP have been met.

Meridian has only two general concerns which are reflected in the specific comments attached. These general concerns are that:

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1) the RMP should reflect that the BLM has completed all the necessary review and analyses and has identified the specific areas which may be considered for coal leasing or exchange; and
2) the objectives and recommendations for the coal and lands programs should support each other and not conflict.

309
These concerns stem from Meridian's continued interest in developing its coal in the Bull Mountains area. The Mammoth and Rehder seams in the Bull Mountain deposit are some of the highest quality coal in Montana. While we have not ruled out other mining methods, we believe that this deposit could be mined economically by underground mining methods in the 1990's timeframe. In order to accomplish such development, however, both BLM and Meridian need to address the coal management problem created by the checkerboard ownership pattern in the deposit. Meridian believes that the most feasible solutions to the checkerboard problem are either mineral exchanges or cooperative leases. Therefore, to preserve the option to engage in either an exchange or cooperative lease in the Bull Mountains, this RMP must consider all aspects of both leasing and exchange, and identify which areas may receive further consideration. When the coal market strengthens and activity planning approaches, Meridian and BLM will then need to decide which option is most appropriate to facilitate this later decision.

23-3

MERIDIAN LAND & MINERAL COMPANY
COMMENTS ON
DRAFT RESOURCE MANAGEMENT PLAN
ENVIRONMENTAL IMPACT STATEMENT
FOR
BLM BILLINGS RESOURCE AREA

310
1) Page 3 - Saleable and Locatable Minerals: Pursuant to 43 CFR 1610.7-1(b), the Draft Resource Management Plan (RMP) must review public lands for designation as unsuitable for entry or leasing for mining operations for minerals and materials other than coal under Section 601 of the Surface Mining Control and Reclamation Act (SMCRA). It is unclear whether this review has been completed and, if so, whether the statements made on page 3 indicate that no areas have been designated unsuitable. Assuming no areas are unsuitable, it is also unclear whether all permits or sales for minerals or materials other than coal will be granted with similar terms and conditions for development, or whether some development will be restricted due to sensitive resource values in certain areas. Meridian recommends the RMP should identify whether any lands are unsuitable and whether any lands will receive more restrictive terms and conditions for development in order to protect sensitive values.

311
2) Page 7 - Coal Leasing: The discussion under subsection B, and the following paragraph are somewhat confusing regarding surface owner consent for coal leases for underground mining. While BLM has tried to make this clear, it seems the addition of a few phrases may help. Meridian recommends the following additions:

- change third sentence under subsection B to:
  "The BLM will try not to lease coal for surface coal mining in instances where a qualified surface owner is opposed to leasing coal on his land."

- change fourth sentence under subsection B to:
  "If a significant number of surface owners are opposed to coal leasing for surface coal mining, a portion of the coal field may be blocked out and not considered further for leasing for surface coal mining during this RMP planning effort."
  [NOTE: Meridian certainly hopes that the above changes reflect the BLM's intent because there is no statutory basis for eliminating the possibility of leasing or mineral exchanges for underground coal mining purposes based on surface owner opposition.]

- change the first sentence of the following paragraph to:
  "Coal lands which pass through these planning steps are described as acceptable for further consideration for coal leasing ~~surface mining~~."

- change the last sentence in the section to:
  "Under either process, no lease sale for purposes of surface coal mining may occur in a split estate situation unless the qualified surface owner consents to surface mining operations."

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312 3) Page 8 - Land Tenure Adjustment: The current draft RMP has only reviewed and identified lands for retention (and thus exchange) within the Land Tenure Adjustment Area. On page 8, it states that the remaining public lands in the resource area will be reviewed and the results incorporated in the final RMP. However, on page 33, it states that the review of the remaining public lands will not be done until after the final RMP. This raises several questions: a) When will the review be completed? b) Will it necessitate an RMP amendment? c) Will there be an opportunity for public comment on the results before they are final? In order to avoid any later confusion, Meridian requests that the public lands underlain by the Mammoth-Rehder beds in the Bull Mountains be designated for exchange in this RMP rather than in a later effort.

313 4) Page 17 - Oil and Gas Leasing: The RMP discusses the need for special stipulations for leases in "sensitive areas" but does not identify where these sensitive areas are. Because these sensitive areas could be relevant to other mineral development and because a RMP must establish "in a written document land areas for limited, restricted or exclusive use ..." (43 CFR 1601.0-5(k)), the RMP must identify these sensitive areas.

314 5) Page 17 - Coal Leasing and Land Tenure Adjustment: It is unclear what coal areas will be carried forward under this alternative as acceptable for further consideration for leasing or for disposal by exchange. Meridian recommends that this information should be provided in map form for this alternative and each of the following alternatives. In addition, it is unclear whether the coal leasing objective is to satisfy local demand or to maintain present production levels. Based on our understanding of the past and existing management trend, the objective has been and is to satisfy local demand. Meridian recommends that the RMP should identify the objective under this alternative as satisfying local demand.

315 6) Page 25 - Coal Leasing: The BLM has not explained why they have chosen a development scenario for analysis purposes which includes surface mining in the Bull Mountain field at a production rate of 300,000 tons per year. Over the years, the coal industry has expressed interest in development in the Bull Mountain coal field and proposed production scenarios for both surface and underground mining at production levels ranging from very low levels up to two million tons per year. In order to ensure that the land use planning analysis and environmental impact analysis are clearly consistent with each other, Meridian recommends that the statements in this section and at page 113 should identify that:

- the BLM anticipates coal production as high as two million tons per year (or whatever level it is that you expect) by underground mining methods;
- the BLM anticipates coal production no higher than 300,000 tons per year by surface mining methods;
- the BLM has used for analysis purposes the scenario including 300,000 tons per year production by surface mining methods because this represents the worst case for environmental consequences; and,

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315 cont.
- the environmental consequences of underground mining at substantially higher production levels will be less than those projected under the BLM's surface mining scenario in every area except for the consequences of having a larger work force.

In the recommendation for the low level management alternative, it is unclear whether all coal to be mined by underground methods is also suitable for disposal by exchange. While such a recommendation is implied, that is not completely clear as currently drafted. Meridian suggests amendment of the first sentence in the third paragraph as follows: "All coal to be mined by underground methods is acceptable suitable for further consideration for leasing or exchange.

316 7) Pages 26 & 27 - Figures 2.6 and 2.7: It is unclear which areas are acceptable for further consideration for leasing. In particular, what lands are in the 9,536 acres cited? Does this eliminate the areas not considered to be of high to moderate coal development potential? Does this eliminate only the landowners who are opposed? Meridian recommends that a map should be prepared which combines the information from Figures 3.3 and 3.5 (pages 60 & 62) with Figures 2.6 and 2.7, and specifically delineates the areas acceptable for further consideration for leasing. In addition, the RMP should indicate the areas considered to be high to moderate coal development potential in all the coal fields in the resource area - particularly the Joliet/Frumberg field if leasing is recommended there.

317 8) Page 29 - Land Tenure Adjustment: The objectives and recommendations in this section state that . . . "no sales or exchanges would be processed in the short or long term." This does not comport with the recommendation in the coal section which states that "Coal exchanges would be considered when it's in the public interest . . . ." It is essential that the recommendations for the coal and land programs in the resource area support and agree with each other.

318 9) Page 32 - Coal Leasing: Meridian's comments on the Low Level Management Alternative also apply to the High Level Management Alternative. It should be clarified that all coal areas to be mined by underground methods are also suitable for disposal by exchange. There should be a map or clear description of the areas acceptable for further consideration for leasing for surface and underground mining. With regard to "locally important resource values" which will be examined during the activity planning phase, Meridian is concerned that the BLM have good data on each resource value in order to assess the trade-offs. We suggest that the BLM develop a plan for necessary data gathering as early in the activity planning phase as possible.

319 10) Page 33 - Land Tenure Adjustment: The objectives and recommendations in this section generally support and agree with those in the coal program; however, we have one concern. The objectives and recommendations under the land program mention mineral exchanges but it is unclear exactly what priority they will have and which lands could be considered. To avoid later confusion, Meridian recommends that the coal areas in the Bull Mountains should be designated as having potential for exchange under the Land Tenure Adjustment recommendation.

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320 11) Page 37 - Coal Leasing: Meridian generally supports the BLM's preferred alternative for coal leasing. Our support is predicated on the assumption that coal areas designated for leasing by the Regional Coal Team (RCT) will receive the same balanced consideration that the Powder River RCT has given other areas. In short, we assume that coal areas will not be dropped from consideration where they conflict with other resource values without due consideration of the economic impact to coal development, the significance of the conflicting value, and the potential for mitigating such impact.

12) Page 37 - Land Tenure Adjustment: Meridian supports the BLM's preferred alternative.

13) Page 38 - Wilderness: Meridian also supports the BLM's preferred alternative for wilderness.

321 14) Pages 53-66 - Geology and Topography: Meridian commends BLM for this section - it is comprehensive and well-written. However, we would like to ask BLM to correct two points. First, Meridian has expressed interest in both cooperative leasing and exchanging in the Bull Mountain field. We ask that the RMP recognize both of these interests. And second, Meridian has recently purchased the Milwaukee Railroad right-of-way between Slayton and Gage in order that it will be available for transporting coal from the Bull Mountains. While this step does not provide rail service directly to the coal field, it does provide a critical link, and thus, we believe it is inaccurate and misleading to say that rail service is a "major stumbling block to coal mining in this area."

15) Pages 82-103 - Wilderness: This section of the RMP is excellent. We were pleased to see good coverage of the mineral values on each wilderness study area. We suggest that this is the best substantiation for wilderness recommendations in any of the recent federal land use plans.

322 16) Page 113 - Coal Leasing Assumptions: Meridian's comment at 6 above is also relevant here. It is essential that the BLM explain what the anticipated coal production from their alternatives will be and why they have chosen the analysis scenarios they used. Meridian also recommends that you add an assumption to this section which states that BLM assumes all coal mining operations must comply with all requirements of the Montana Strip and Underground Mine Reclamation Act and SMCRA. This is important because often the public tends to forget that these acts require protection of, and mitigation of impacts to, resource values. Additionally, BLM should state that: the site-specific and cumulative environmental consequences of coal leasing will be analyzed prior to any leasing; and the site specific environmental consequences of coal mining will be analyzed prior to approval of a mining permit.

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Company 555 Seventeenth Street
Denver, Colorado 80217
Telephone 303 575 7577

J. R. Mitchell
Public Lands Coordinator

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June 24, 1983

Mr. Glenn W. Freeman
District Manager
Lewistown District
Bureau of Land Management
Airport Road
Lewistown, MT 59457

JUN 30 1983 RECEIVED
ACTION

Re: Draft Environmental Impact Statement and Proposed Resource Management Plan for Billings Resource Area

Dear Mr. Freeman:

Atlantic Richfield Company appreciates the opportunity to comment on the Draft RMP and EIS for the Billings Resource Area in Montana.

323 Upon reviewing the DEIS, we found that BLM did not include the most fundamental part of a plan -- a map which outlines how the Resource Area is to be managed on a site-specific basis. As a result, we are unable to determine how the proposal impacts present or future energy and mineral activities, our primary concern. BLM has pointed out in the DEIS that there are 649,433 acres of federal mineral estate within the Billings RA. Under the preferred alternative 70,000 acres would be subject to special leasing stipulations, while the remaining acreage would be subject to standard stipulations. This may be a

324 reasonable approach; however, we cannot discern from the planning document where the 70,000 acres are or why they would be subject to special protection measures.

325 While BLM does discuss the mineral potential existing within the Billings RA, there is no evidence of an analysis of all the resource values, including energy and mineral resources, which would provide a basis for determining what would be the best and highest use of the land. We feel, therefore, that BLM cannot defend the land management decisions mentioned in the plan because no basis for the decisions is outlined in the planning document.

326 Energy and minerals must play a major role in land management decisions. The exploration for and

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Mr. Glenn W. Freeman
June 24, 1983
Page 2

326 cont.

development of these resources should be provided for in this plan by opening or maintaining access to areas which may contain these resources. Areas identified as having energy and mineral potential should influence other resource decisions. Access to these areas should be restricted only by the minimum legal standards established for environmental protection. In areas where conflicting resource values may outweigh mineral values, the BLM should identify what minimum environmental protection is necessary to meet the plan objective for these resources.

327

It is important for the BLM to recognize how energy and mineral resource values should influence the land management decisions and the role of minerals in the formulation of management prescriptions. In order to comply with the FLPMA requirements and to achieve the goals and objectives of multiple use management, the BLM needs to:

1. To provide for mineral resource and development on BLM lands.
2. Identify lands having energy and mineral potential and take action to open or maintain access to those resources, while meeting minimum legal standards for environmental protection.
3. Identify where conflicting resource values outweigh mineral resource values and what minimum standards for protection must be met to meet the plan objectives.

328

The BLM is required to show the effects of alternatives on all resource values, including energy and mineral resources. Each of the management alternatives selected must identify the tradeoffs that would occur as a result of the possible implementation of that alternative as it relates to energy and mineral values. The tradeoffs should include: opportunities and restrictions for access to minerals, minimum protection stipulations required under each alternative, and analysis of relative value placed on each conflicting resource.

The District Manager is required to develop a preferred alternative which will meet national and

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Rocky Mountain Oil & Gas Association, Inc.

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June 21, 1983

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ACTION

Mr. Glenn W. Freeman
District Manager
Lewistown District
Bureau of Land Management
Airport Road
Lewistown, MT 59457

Dear Mr. Freeman:

I am writing on behalf of the Rocky Mountain Oil and Gas Association (RMOGA), a trade association of approximately 800 companies and individuals involved in all aspects of oil and gas exploration, production, and transportation activities throughout the Rocky Mountain West. We appreciate this opportunity to comment on the Resource Management Plan for the Billings Resource Area. Following are some issues we would like considered in the development of this plan.

331

There is no evidence of a resource analysis or a conflict analysis being prepared which would provide a basis for determining what would be the best and highest use of the land. Therefore, the BLM would be unable to qualify or defend its land management decisions.

332

There is no map in the proposed plan or DEIS which illustrates exactly how the BLM plans to manage the Billings Resource Area. In fact, there is no real outline contained in either of these documents which provides a site-specific analysis as to how these lands are to be managed.

333

There are 649,433 acres of federal mineral estate within the Billings Resource Area. Under the Preferred Alternative, 70,000 acres would be subject to special leasing stipulations while the remaining acreage would be subject to standard stipulations. However, the proposed plan and DEIS do not specify where the 70,000 acres are or why they would be subject to special protection measure.

334

The BLM must recognize how energy and mineral resource values must influence planning decisions in order to comply with planning requirements and multiple use management guidelines. Specifically, the BLM should:

24-3

Mr. Glenn W. Freeman
June 24, 1983
Page 3

329

State Director guidance. When the preferred plan alternative is ultimately selected and published, each prescription for management should describe the specific impact on energy and mineral resources. This should include: the minimum standard requirements for surface protection upon issuance of leases, permits and plans of operation; and what additional requirements if any, are to be placed on these activities in order to meet the objective of the prescription. Also, the prescription should give rationale as to why normal standards are not sufficient to protect the land use objective.

330

In conclusion, we believe that BLM must reassess its approach to planning and how to comply with NEPA and the FLPMA. There are specific requirements which must be met during the planning process; and we don't believe that BLM has complied with these requirements. Please don't hesitate to contact us should you feel further discussion of these comments is warranted.

Sincerely,

J. R. Mitchell

J. R. Mitchell

25-2

Mr. Glenn W. Freeman
District Manager
Lewistown District
Bureau of Land Management
June 21, 1983
Page Two

334 cont.

- Provide for mineral resource and development on BLM lands;
- Identify lands having energy and mineral potential, and take action to open or maintain access to those resources while meeting minimum legal standards for environmental protection;
- Identify where conflicting resource values outweigh potential mineral resource values and what minimum standards for protection must be applied to meet the plan objectives.

Thank you for the consideration of our views.

Sincerely,

Alice I. Frell
Lands Director

AIF/dar

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MINERALS EXPLORATION COALITION

Energy Advocates
Public Policy

[illegible] West Cedar Drive
P.O. Box 15638
Denver, Colorado 80215
303/909-5367

DEPT. OF INTERIOR
BUR. OF LAND MANAGEMENT
1983 JUL 19 AM [illegible]
MONTANA STATE OFFICE
BILLINGS, MONTANA

July 14, 1983

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Mr. Michael J. Penford
State Director
Bureau of Land Management
P.O. Box 30157
Billings, MT 59107

Dear Sir:

This letter constitutes the written comments of the Minerals Exploration Coalition (MEC) on the Billings Resource Area Draft Environmental Impact Statement and Resource Management Plan. The MEC represents mineral exploration companies and individuals conducting hard minerals exploration on federal land.

335 In view of the fact that wilderness areas designated after December 31, 1983, will be withdrawn from appropriation under the mining and leasing laws, we believe that all areas with mineral and energy potential should be excluded from wilderness designation, even though no economic deposit is now known. The withdrawal limitations will preclude the collection of new data, and new areas of mineral potential will not be found. With new discoveries effectively stopped, the policy of excluding all currently known mineral potential from wilderness should be followed, so that exploration of these areas will not be restricted and minerals might yet be produced. Explorationists tend to look at the long term because the lead time of discovery may be ten to fifteen years. The impact of wilderness on minerals should be assessed over the long term (a century or more). We believe that land use decisions should be in conformity with the policy statements made in the National Minerals Program Plan and Report to Congress released by the President in April, 1982.

The preparers of the DEIS/RMP have identified the major minerals to be found in the area. The coal and oil and gas production

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Major W. Seery*, Lakewood, Colorado
Eliseo Gonzales-Urum*, Lakewood, Colorado
W. Glen Zane*, Englewood, Colorado

*Executive Committee member

27

AMERICAN COLLOID COMPANY

P.O. Box [illegible]

DEPT. OF INTERIOR
BUR. OF LAND MANAGEMENT
1983 JUN -6 PM 1:10
MONTANA STATE OFFICE

June 3, 1983

Mr. Michael J. Penfold, State Director
Bureau of Land Management
222 North 32nd Street
P.O. Box 30157
Billings, MT 59107

Dear Mr. Penfold:

This letter is in response to your invitation for Public Comments concerning the Billings Resources Area Draft Environmental Impact Statement and Resource Management Plan, April 1983.

To begin, American Colloid Company would like to thank you for your invitation to comment. Additionally, we would like to thank you and your staff for conducting the Public Hearing on this plan in Lovell, Wyoming on May 31, 1983, and for allowing me to speak briefly on American Colloid Company's concerns regarding this plan.

338 Our major concern is that while you acknowledge American Colloid Company's on-going operations in the resource area, you have included Section 34 of Township 9 South Range 26 East MPM in an area listed as "Vehicle Use only on Designated Roads". As you can see from the attached computer printout, American Colloid Company has twenty-two claims in this section which were staked between September 1, 1939 and June 13, 1966 and have been maintained since that time. Nowhere in your plan do you make reference to American Colloid Company's right to explore, mine, haul and reclaim lands in this section under existing rights.

We request that you review this issue and either acknowledge American Colloid Company's rights on this land in the final Resource Management Plan or amend your "roadless" area exclude the Northwest Quarter, and Lots 2,3,4,5,6,7,10,11, and 12 of Section 34 Township 9 South Range 26 East MPM.

Once again, thank you for the opportunity to comment on this plan.

Sincerely,

Ron Sieg
Reclamation Specialist

cc: Mr. Glenn Freeman, District Manager
Lewistown District Office
Bureau of Land Management
Airport Road
Lewistown, MT 59457

cc: Boyd Klingler, Executive Vice President
American Colloid Company
Skokie, IL 60077

26-2

2
BLM-Billings Resource Area/DEIS/RMP
7/14/83

figures and descriptive data adequately summarize exploration and development potential for these commodities. The Industrial Minerals section summarizes the known and probable mineral occurences in the area.

336 The Preferred Level Management appears to provide the natural resource industry with the flexibility required to permit exploration and development. However, the portion of the Pryor Mountains WSA and Burnt Timber Canyon WSA covered by mineral claims and other areas with mineral or energy potential, should be excluded from the proposed wilderness areas.

337 The Burnt Timber Canyon and Big Horn Tack-On areas, which are less than 5,000 acres, are listed as ineligible for consideration as wilderness in the Federal Register of December 31, 1982, p.58372. These areas should not be considered further for wilderness designation.

Thank you for the opportunity to comment on the plan and the DEIS.

Sincerely,

John D. Wells
President
MINERALS EXPLORATION COALITION

JDW/th

28

Chevron U.S.A. Inc.
700 South Colorado Blvd., P.O. Box 599, Denver, CO 80201

Richard T. Hughes
Staff Analyst
Legislative and Regulatory Affairs

June 20, 1983

Draft RMP/EIS
Billings RA

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Mr. Glenn W. Freeman
District Manager
Airport Road
Lewistown, Montana 59457

Dear Mr. Freeman:

340 339 We are concerned that the Draft RMP/EIS for the Billings RA does not adequately address energy and minerals. We believe some attempt must be made to identify energy and mineral potential and to examine the effects that surface restrictions may have on development of that potential. Energy and minerals are important uses of public land and without positive consideration in the planning process, the benefits of such uses cannot be realized.

Sincerely,

RTH/cgf

Central Region – Exploration, Land and Production

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Hope Ryden
345 East 81st Street
New York City 10028
July 9, 1983

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Mr Jerry Jack
Bureau of Land Management
Billings, Montana
59101

Dear Mr Jack,

Have just returned from my stint in northern Minnesota at an eagle nest and have quickly turned my attention toward putting my thoughts on paper regarding the alternatives proposed in the draft EIS. Please include the material enclosed in the official record. I also will be sending a photograph of "Scarbottom" along for the record to illustrate my objection to seven miles of fencing.

I want to thank you for attending to the wire cut injuries incurred by the above stallion "Scarbottom." I hope the treatments put him on the road to recovery. I would be most interested in learning of the outcome of your efforts to treat him.

My wild horse count turned up 128 horses, 16 of which were foals of the year. I expect a limited number of foals may yet be born, but likely the majority had come into this world by the date I left (June 9). I cannot see any good purpose will be served by conducting a roundup this year. Surely it ought not be necessary to roundup 7 excess horses at great cost to the taxpayer and to the horses themselves. The earlier plan to roundup 30 to 40 horses was obviously based on expectation of a large foal crop which did not occur. Nature does some managing, believe it or not. I suggest you wait a year before taking off more horses. It is interesting that nearly all of the foals born this year happened to be males--a stroke of good fortune. I would not eliminate foals in this year's class at all. What few females have been born will be important to future breeding and the males will help to solve the problem of a skewed sex ratio.

Yours truly,

Hope Ryden

Hope Ryden

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STATEMENT BY HOPE RYDEN ON THE DRAFT ENVIRONMENTAL
IMPACT STATEMENT FOR THE BILLINGS MONTANA
RESOURCE AREA

JULY 1983

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I am the author of three books on wild mustangs, including AMERICA'S LAST WILD HORSES, which received the Oppenheimer Award for the best book published in 1970 in the category of Americana. This book was also listed by the Library Journal in its roundup of best books published in 1970 on science and technology. My comments on the proposed management alternatives for the Pryor Mountains reflect my longstanding interest in the horses that inhabit the area. Over the past fifteen years, I have returned repeatedly to observe, study and census the herd.

I appreciate the opportunity to review the draft EIS and have found a number of sound ideas are contained in it. I regret , however, that the statement fails to present options which recognize the primacy of wild horses in this area that has been specifically set aside for their use by special act of the Secretary of the Interior in 1969. In fact, in all four alternatives explored, horse numbers have been limited to 121 animals---a figure I regard to be arbitrary for several reasons. In the first place, it does not take into account the fluctuating age and sex structure of a herd. Moreover, the figure does not take into account the fluctuating state of the range during wet and dry years. In fact, this figure was computed on the basis of a one-time assessment of range conditions conducted after a lengthy period of virtually no rainfall.

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I do not, however, intend to base myoase for increasing the limit placed on horse numbers on these lapses. Instead, I wish to call your attention to the fact that the conversion rate used (of 1.25 AUMs) to calculate the number of horses the range can support is no longer supported by scientific findings. (see attached reference to study made by Rittenhouse, et al, in 1982 at Colorado State University and reported by the National Academy of Science Committee in its FINAL REPORT on WILD AND FREE-ROAMING HORSES AND BURROS.

Rittenhouse has found that within the range of mature animals, weight is not a significant factor in determining how much forage an individual will consume. Lactation, on the other hand, is a determining factor. A lactating mare, on average, consumes 14% more forage than does a lactating cow. A non-lactating mare consumes 7% more forage than does a non-lactating cow. A lactating cow consumes 17% more forage than does a non-lactating horse (12.2 kg per day and 10.4 kg per day respectively). Since a herd of cattle is normally composed for the most part of lactating animals (ranchers artfully manipulate their herds to obtain this condition by selling off males and non-breeding females)------and since wild horse herds are normally made up of a majority of non-lactating animals (even in the Pryor Mountains where females outnumber males, annual foaling does not exceed 25%)---it is likely that a herd of cattle and a herd of wild horses consume the same amount of forage. Certainly, the evidence does not support the use of a 1.25% conversion rate cows to horses.

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341 cont. Given this new information, the Pryor Mountains Wild Horse Range ought to be able to support 152 wild horses based on the range study upon which forage availability was determined (notwithstanding my opinion that this range study was biased and underestimated the forage production of the area). I call your attention to the fact that other BLM districts are assigning 1 AUM per wild horse head as a result of this finding (see Southern Malheur District draft EIS from Southeastern Oregon).

342 A second point I would like to comment on is that of the cost of rounding up a single horse---listed as $700 in the BLM's draft EIS. If, as I have been told, salaries of staff personnel are being projected into this assessment, I would like to say that it will not save the taxpayer much money whether horses are rounded up for adoption, shot, or left alone. A more realistic way of viewing possible economies would require that these ongoing costs be excluded. Dr Frederic Wagner of Utah State University, who is chairman of the National Academy of Science Committee to study Wild and Free-Roaming Horses and Burros, noted that "removal costs decline as roundup and adoption procedures become more standardized and efficient." He also has asked why the government makes such an issue over supporting the wild horse program while willingly paying the way of animals in national parks and refuges.

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342 cont. Rounding up horses too frequently is obviously an extravagance. The NAS Committee recommended, among other things, that herds be rounded up every few years rather than annually or semi-annually.

Another proposal made in the draft EIS---to correct the current imbalance of mares to stallions in the Pryor Mountain herd--is one with which I concur. As a consequence of the misguided disposition of 60 stallions in the early 1970s, the sex ratio of this herd is now skewed to favor mares by 2:1. Normally, a herd would consist of roughly the same number of males and females. Obviously, by removing some breeding females and retaining males, rate of annual increase will be slowed down. Making this correction will also give a boost to the gene flow, allowing more exchange of mares among a greater number of stallions.

343 My only concern on this proposal is that the BLM may carry the idea too far and create a herd that is too "heavy to studs," as suggested by language on page 35. Not only would this disrupt normal social interactions in a species that has evolved a polygamous pattern of association, it might even threaten the long range survival of the Pryor Mountain herd. Skewing the sex ratio to favor studs---were this to be done in a limited way---would require that the BLM pay strict attention to the preservation of young age classes of females in order to safeguard future breeding. In any case, balancing the herd ought to be done and will pay off in many ways. It can be accomplished gradually through the disposition of females and the retention of males when reductions must be made.

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A related point made in the draft EIS is the suggestion that unique characteristics of the Pryor Mountain horses be preserved. I agree. I believe this can also be accomplished gradually through the disposition of less characteristic animals when reductions are necessary. Moving stallions about to promote breeding, on the other hand, ought not be done.

344 Any such manipulation for ~~above stated~~ purpose would be counter to nature's greater purpose, which is to perpetuate the genes of the strongest males.

345 This raises the question of how much manipulation of horses ought to be done at all. On page 149 of the EIS the "high level management" alternative contemplates a degree of grazing regulation and other manipulation to which I object. While I concede that on occasion it may be necessary to relocate a particular band due to unusual circumstances, I oppose this as standard practice. The high level management alternative

346 also would authorize such activities as mineral exploration and timbering. These would be most intrusive and harmful to the herd. The point which seems to have been missed in this draft EIS is that the area has been specifically set aside for the wild horses that live here by an act of the Secretary of the Interior in 1969. This herd of mustangs ought not be managed under the multiple-use commitment designated for BLM lands in general. This herd of horses was protected prior to the passage of the Wild and Free-Roaming Horse and Burro Act and ought not be regulated in the same manner and to the same degree as horses that occur elsewhere.

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347 A question arises whether a "wilderness" designation might not conflict with the present designation of the area as a wild horse range. Implicit in the draft EIS language is a hint that such might be the case. (page 160) For this reason I oppose any such a designation which could "reduce management options". At the same time I have conferred with Senator Henry Jackson's staff on this question and been assured that the horses' status will not be threatened by a wilderness classification. But since the question might have to be thrashed out and would invite the involvement of conflicting interests who might oppose the wild horse range, I oppose this plan. Moreover, I believe the horses and other fauna in the Pryor Mountains would be increasingly disturbed by recreation seekers were the area to be proclaimed "wilderness."

348 The draft EIS also proposes that seven miles of fencing be constructed. Where? And why? Fencing is extremely dangerous to wild animals. They become hung up or cut on the barbed wire. A Pryor Mountain stallion was severely wounded on an existing fence this spring and required help from the BLM as a result. Surely seven miles of fencing is not in the best interest of the herd. I am submitting a photograph of the injured stallion to underscore the hazards posed by fences.

A further request for 5 new water catchments amazes me. During the many years I have consumed the wild Horses, I have yet

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to see the two existing water cachements put to use. I should think that taxpayers would object to financing the construction of five more of these expensive devices which, heretofore, have only served to tease the horses with the smell of water that has been shut off to them. Moreover, water stored under the tarpaulin covers is not even available to the surrounding vegetation. I would need evidence that the BLM is putting existing water cachements to use before advocating that more money be spent for the construction of additional ones. 349

On the other hand, I firmly support the draft EIS proposal to purchase 2,240 acres of state and private land to be incorporated into the horse range. This land, I understand, is currently under lease by the BLM and is being used by the wild horses. I would hope that purchase of the land, which is being offered for sale, will be made promptly before it is sold to some other buyer. 350

Thank you for this opportunity to comment on the draft EIS. I look forward to receiving a response to several of the questions I have raised and hope that the points I made will prove useful.

(1) enclosure

A photograph of the Pryor Mountain stallion injured by a wire fence will follow under separate mail.

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vegetation type of southeastern Oregon are fundamentally grass eaters.

Forage Consumption Rates and Animal Unit Equivalents Knowledge of the daily quantity of forage dry matter consumed by an animal of given size and physiological status (i.e., lactating, nonlactating) is a fundamental starting point for calculations of grazing capacity and is a factor in decisions for allocating the common forage reserve among various sympatric animal species. By virtue of anatomical differences in the configuration of the gastrointestinal tracts of horses and cattle, numerous researchers have theorized that a horse of a given size or body weight can consume more forage than a comparable-sized cow. Therefore, suspicion has existed that the standard procedure for calculating animal unit equivalents may be inappropriate for horses. This is discussed at length in the Phase I Report.

The accepted definition of an animal unit (AU) is a 455 kg (1,000 lb) cow or her equivalent (Society for Range Management, 1974). To convert among animal species, one merely divides the body weight (kg) of the animal in question by a factor of 455. The sophistication of this approach may be enhanced by using metabolic body weights, i.e., body weight (kg) raised to the fractional exponent of 0.75, divided by 455 also raised to the 0.75 power. However, the additional accuracy achieved by this procedure is open to question, and the use of simple body weights (i.e., weight to the power of 1) is the usual convention.

Since there is virtually no available literature concerning forage intake rates by the wild horses, the Colorado work by Rittenhouse and his associates (1982) was initiated during Phase II. These studies were conducted on a 400-ha tract of rangeland located some 8 km southwest of Durango, Colorado. Plant communities on the area included sagebrush-grass associations, open grassland parks, ponderosa pine woodlands, mountain meadows, and dense stands of gambel oak. Although no populations of feral equids are known in the general area, vegetation and topographic features are similar to those found on some of the other areas of the West where wild horses occur. Thus, some of the vegetation-related findings should be directly applicable to such areas. The more important question is the differences or similarities between horses and cattle occupying a common range, and results relating to this should be broadly applicable.

Findings were based on total fecal output measurements from animals equipped with fecal collection devices. These indicated that mares, on the average, consumed about 14 percent more forage dry matter (12.5 kg per head per day) than did cows (11.0 kg per head per day). However, a substantial difference of about 20 percent was noted between lactating mares (14.6 kg per head per day) and lactating cows (12.2 kg per head per day). Nonlactating mares and cows consumed 10.4 and 9.7 kg per head per day, respectively.

A surprising result of the Colorado research was that forage consumption by horses was not related to animal body size (weight), within the range of mature animal weights studied (367 kg to 578 kg

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per head). This led the researchers (Rittenhouse et al., 1982) to conclude ". . . when comparing intake for horses and cows of approximately the same body sizes, reporting intake on a per body size basis may be more confusing than helpful."

Utilization of nutrients (as measured by apparent digestion coefficients) was higher in cows than in mares, with the exception of protein that was digested more thoroughly by mares (44 percent versus 36 percent). Cows digested (cell wall constituents) much more extensively (65 percent) than did mares (53 percent). The rate of passage of food material through the alimentary tract of cows was considerably slower than through mares, hence the longer residence time of ingesta in cows partially accounted for the higher fiber digestion. Theoretical concepts relating to consumption rates in equids and ruminants are discussed in considerable detail in the Phase I Report.

Although some need further research, results from this study carry potentially important implications for wild horse management. Findings on consumption rates add support to the practice noted in the Phase I Report (see p. 97) of attributing an animal unit equivalent of 1.25 to mature horses. Although this value appears high in light of the current Colorado results (i.e., an average 14 percent greater forage consumption by mares), unreported evidence suggested that the 14 percent difference was conservative (L. R. Rittenhouse, personal communication, 1982). The difference appeared to hold over a fairly wide range of forage quality conditions.

The findings also raise the temptation to speculate on relative adaptive strategies of horses and cows. Differences in passage rates of ingesta would appear to confer an advantage on horses over cattle under poor forage conditions. For example, horses would appear to be able to consume more forage per day to compensate for the low nutrient concentrations, whereas cows (and other ruminants) would not. Horses are well equipped to extract the scarce quantities of dietary protein that are usually nutritionally limiting under such conditions. Behavioral attributes, such as the greater mobility of horses would also appear advantageous; they could quickly move to alternate areas when forage became scarce. However, the appropriate data to test hypotheses relating to competition definitively are still insufficient. This statement is not intended to detract in any way from the major contribution made by the Colorado researchers to our knowledge of nutrition and grazing ecology of horses and cows. The reader is encouraged to refer to their original report (Rittenhouse et al., 1982) for details.

Habitat Preference and Use The problem of making decisions on forage allocations to combined populations of horses and livestock, and of assessing competition between the two, is a more complex one than can be solved with measurements of dietary overlap alone. For, in an oversimplified case, if horses and cattle chose very different habitats on the basis of topography or vegetation type, there would obviously be no chance for interspecific competition even though they fed on the same plant species. And all of the allowable forage offtake

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Box 303
Broadus, Mt.
59072
July 3, 1983

Dear Mr. Jack,

I'm writing you because I understand that your office is considering expanding coal leasing in the Bull Mts. Since we own and operate a ranch on Fattig Creek,

I do hope that expansion will not go further than what is needed to supply the Broadus area with coal. Having lived in this area for many years we've seen what a fragile area it is, how difficult it is to get 351 352

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352 cont. | there is to grow once the natural growth is disturbed, and how the springs and creeks can fluctuate from season to season.

Please give serious consideration to these things when you consider leasing this area.

Sincerely,
Kay Bedford
(Mrs. H.D. Bedford)

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354 cont. | to private parties at any cost to environment or to the local citizenry. I believe the government will protect me against surface or anything seeking to destroy me or my way of life.

If I were convinced that strip mining coal inside Bull Mountains was essential to the best interests of my community, state, or nation, I would never write this letter but careful study has shown this is not the case.

Please do not let the coal interests with their gifted speakers destroy an area which they themselves have proven they cannot reclaim. Thank you.

31-2

Sincerely
Mary J. Brown

31-1

Box 853
Roundup, Montana 59072
June 29, 1983

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Mr. Jerry Jack, Manager
B.L.M. Billings Resource Area
810 East Main
Billings, Montana 59101

Dear Mr. Jack:

I would like to take this occasion to tell you that I am opposed to strip mining on the Bull Mountains other than what being presently done by small operators who supply the coal needs of this area.

I have been a resident land owner since 1965 presently operating a 200 acre horse ranch on the Bull Mountains and teaching school at Roundup High school. About seven or eight years ago a Mr. Robson with the U.S.B.M. tested the wells and springs on our place and monitored them for a year or two. In the information he supplied us, we have 37 foot water wells at the corral and house which have supplied our needs during all periods of heavy use with no problem. The spring and pond, to which the animals water adjacent, run on by year including 100 cow/calf pairs during a summer lease program operated seven or dry years. Mr. Robson said strip mining on a large scale anywhere on this area would seriously jeopardize our water supply. Our wells would have to be re-drilled probably several hundred feet, and our spring would disappear.

353 | On the county extension tour several years ago to the consolidated coal test pit located west of us on the Stiffone ranch, we were shown the apparently no expense of reclaiming the strip area because the top soil and vegetation in this Bull Mountain area is fragile and has been so designated by the State of Montana.

354 | Since my father worked for a large oil corporation for 30 years, I know the power structure well and, perhaps, our local opposition to these large companies is a bias in fairness. However, I am an educated citizen who hopes our government listens to me and protects my interests and will not aid and abet the big corporations in their desire

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1215 Hauser Blvd
Helena, Montana 59601
July 11, 1983

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Mr. Jerry Jack, Area Manager
Billings Resource Area
810 Main
Billings, Montana 59101

Dear Jerry Jack,

I am writing you to tell you that I am opposed to the sale of public lands.

I use public lands for recreation. This recreation consists of hunting, fishing and camping. I consider public lands to belong to me, my wife and the children and as past-owner we do not want any public lands to be sold. Sale of public lands will not reduce the public debt by any significant amount.

One of the ~~most~~ most aggravating things to find is posted, private land. I urge you to increase the total BLM land acreage. I urge you to consolidate

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land holdings so that the public value and public accessibility to BLM land is increased. This can be done by exchanging land and by purchasing additional land.

Wildlife needs all the help it can get. Don't sell the habitat needed by wildlife to live, rest, eat and reproduce.

Please study each individual piece of land being considered for sale and know its individual value. Please allow me as a member of the public to be in on the ~~dec~~ decision-making process.

355 Mr. Jack, I strongly urge you to increase the total BLM land acreage, to increase the public value and wildlife value of this land, and to increase the accessibility of this land to the public!

Yours truly,

David L. Arbenz

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July 12, 1983

Mr. Jerry Jack
Billings Resource Area
810 Main
Billings, MT 59101

Dear Mr. Jack;

I am a Montana resident who moved to this beautiful state because of its large amount of public lands. It really does suprise me that the federal government is even considering the sale of some of these public areas. I do understand that because of the 'checkerboard' arrangement of some small plots, it makes it difficult to manage. So I would like to express my support of exchanging these lands with low public value for others with higher public value. Remember, our lands were set aside years ago for the future of our country. We can not allow the sale of these valuable resources for a "quick fix" to our national debt. Please do what you can to stop these proposals, and eliminating the opportunity for further subdivision of our lands. Thank you.

360 361 362

Melissa L. Tuemmler

Melissa L. Tuemmler
315 22nd St. N.
Great Falls, MT 59401

33

CLYDE A BRAY
1023 West 4th Street
LAUREL, MONTANA 59044

356 I oppose the sale of lands. I will accept administrative transfers when such transfers maximize public values and not just ease administration.

357 I support exchanging lands with low public values for other lands with higher public values.

358 --Furthering the opportunity for subdivision of lands should never be a goal of public land disposal.

359 I believe that the BLM should conduct an assessment of each proposed tract to determine the resource value of the tract and its role in the maintenance of our wildlife and other natural resources. I insist on public involvement in each step of this program and will not accept using one Resource Area as a model for disposals in other areas of the state.

Clyde A Bray

35

July 14, 1983

Dear Mr. Jack,

I am a recent citizen of Montana, having come from Utah. There is a good chance that I will spend the rest of my life here. I am happy that Montana is so big and clean and beautiful, and even wild in places, for some of the most worthwhile and enjoyable time I spend, I spend out of doors, backpacking, x-c skiing and fishing, or often just driving. In this respect all the west has a lot to offer, but Montana is especially favored. Since I came here at the first of the year, I have skiid, fished, floated and hiked all through southwestern Montana. I have hiked in the Beartooth-Absaroka Wilderness, the Bridgers, the Crazies and the Tobacco Roots, floated the Jefferson and the Madison, skiid x-c in the Bridgers, the Beartooths, the Gallatin and the Madison ranges, and fished the East Rosebud, the Stillwater, the Boulder, the Madison the Yellowstone and the Gallatin, as well as several lesser streams. In short, I take advantage of many forms of nondestructive outdoor recreational opportunities, and do so often.

I am sure you realize, as I do, how hard it is (impossible really) to get agreement on how much is too much and how little is too little on nvironmental and land use matters. Therefore, I wish only to express my sentiment to you, not to try to prove anything. In my opinion, the more outstanding scenic and recreational land, and land rich in wildlife, that is kept intact and open to anybody like me who wants to take advantage of it without changing it, the better. I think that in a very real way each of us owns the whole earth.

To be somewhat specific: Please don't sell us short to the BNR, or any other corporation or industry!

Sincerely,

Rick Robinson

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PLAN ___ ___

Robert D. Hiaring
4525 Pine Cove Road
Billings, MT 59106

July 15, 1983

Mr. Jerry Jack, Area Manager
Billings Resource Area
810 Main
Billings, MT 59101

Dear Mr. Jack:

It is my understanding that the Bureau of Land Management is continuing with its plan to dispose of certain public lands. I would like to state my opposition to that procedure. Any action that
363 would reduce the amount of land in the public domain is contrary to the public interest. Public lands are an important resource and heritage that must be retained. If problem areas exist they can be handled by administrative transfers and exchanges.

364 The sale of public lands should not be used as a revenue source. My hope is that the United States government would be managed as an ongoing concern. It is highly impractical for an ongoing business to derive income by liquidating its assets.

I feel that the majority of the public share my views. I hope you will consider them in the decisional process.

Sincerely,

Robert D. Hiaring

ROBERT D. HIARING

37-2

State Director, BLM — July 14, 1983

- Page 2 -

I am confident that your professional people can continue to manage our public resources on a multiple-use and sustained yield basis to protect wildlife, fish, and other recreational habitat, but I am concerned that the current administration has already hampered your professional staff from performing their duties because of the unavoidable potential political impact of executive orders, budget cuts, new rules and policy, and other anti-environmental maneuvering.

I believe that the current administration in Washington, D. C. has no interest in, or knowledge of, environmental matters or values. This attitude has many people alarmed and they are forced to spend much time and money attempting to offset the negative environmental impacts of this administration.

Your report is an excellent professional document and I appreciate the opportunity to provide my comments.

Sincerely yours,

Paul F. Berg

Paul F. Berg

37-1

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3708 Harry Cooper Place
Billings, Montana 59106
July 14, 1983

State Director, BLM
222 N. 32nd St.
P. O. Box 30157
Billings, Montana 59107

Dear Mr. Pomfold:

Here are my comments on your April 1983 draft EIS, Billings Resource Area Management Plan.

365 Although wildlife and fish management is included, it appears to be subservient to economic uses (grazing, oil, gas, coal development, timber harvesting, etc.).

366 Hunting, fishing and other recreational pursuits are important uses of public lands and waters in this area. They will be more important in future years. More must be done to assure effective and efficient management of these resources on an equal footing with economic uses. For example, increasing range water development (for livestock) as a means of expanding wildlife habitat is good, but this must be done with care and closely coordinated by your professional wildlife and range technicians to avoid over development of water which could lead to livestock overgrazing and reduction of wildlife habitat in some areas.

367 The 38% increase in AUM's with the High Level and Preferred Level Alternatives would be satisfactory only if this can be supported by additional range development without infringing on wildlife habitat or use. Such development must be closely monitored by your technicians to permit early adjustments as may be necessary to prevent range damage by overgrazing by livestock or wildlife. The range is our capital investment. It must be protected from abuse from any cause. Satisfactory corrective action is difficult, costly, and sometimes impossible.

368 I object to selling of any tracts of land listed in your report. None appear to be needed by a municipality for a public park or other public purpose. All of these, even the small ones, contain wildlife value. They should be retained in public ownership or exchanged as appropriate for private or other lands located along rivers, lakes, ponds, etc. or for other lands that you determine would be needed to improve public access or to consolidate small parcels into larger more efficient management units for better public use and enjoyment.

369 The report should include a section on non-game wildlife in each alternative. Many of these species may not have any direct economic value, but they are part of our ecosystem, serve as indicators of environmental quality and are enjoyed by many people in the natural habitat.

370 More emphasis should be directed on gaining public access to all BLM lands, particularly the larger blocks located close to Billings and other municipalities. The public has a right to access to its lands which is now denied to many large areas.

371 I favor the Preferred Level of Management Alternative. However, I am concerned about the subservient treatment given wildlife and fish and other recreational activities compared to the economic uses. Also, those who use the public resources for profit (grazing, oil, gas, coal development, water development, etc.) are not charged adequate use fees.

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July 12 1983

Writing a few lines on the Township company Creek pasture, Pasture that I had for donation BLM land, that I had so much trouble with the public and hunter for so long of time trepassing throw my property for so many years, so had to it authorized by the County Commissioner to have the roads closed to stop the butchering of our cattle destoying fences gates wood mills they put 56 bullet holes in one wind mill Willie peterson had to send for one and it take months to get a mill

There five gates on the road from the last that I mountain before any one gets to BLM land, all these gates been on this. Rogerson trail sense Grazing District started almost the gates with in 1935.

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38-2

372

John C Brown and Lloyd Shellhamer and I will give access on the river front because I own a few acres of land on the BLM river front they can use by boat if the public want to.

Your truly
Victor Ballek

40

SE 500 Grantsdale Road
Hamilton, MT 59840

July 12, 1983

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Mr. Jerry Jack, Area Manager
Billings Resource Area
810 Main
Billings, MT 59101

Dear Mr. Jack:

I am writing to oppose the sale of public lands - lands in which I personally have a vested interest as a citizen of the United States.

378 377

I can accept administrative transfers if these transfers maximize public values, exchange of low public value properties for other lands with higher public values. I am adamently opposed to subdivision of lands. I feel maintenance of our wildlife and other natural resources is of primary importance.

Everyone in this United States needs some place to escape and get back to nature and reassess the values of life in this wonderful country. If you dispose of all our escapes - soon we will be an "Endangered Species" ourselves - we will have no breathing room left.

Yours truly,
Dorothy E. Palmer
DOROTHY E. PALMER

39

To: Michael Penfold

I am writing in regard to the proposed BLM land disposals.

June 8, 1983

I oppose sale of these lands.

373

I would support exchanges of low public valued land for higher public valued land.

374

I oppose subdivision of lands as a goal of disposing of public lands.

375

Each proposed tract should be assessed of its wildlife and natural resources.

376

Public involvement should also play a large part of this program, for these are public lands!

Sincerely,

Dr Anne Hart

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CC:
Baucus
Williams
Melcher
Marlenee
Jack

41

2006 Northridge Circle
Mont
59102

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Dear Mr Jack,

I am very much concerned about strip mining in the Bull Mountains.

As a landowner it is of great concern, thinking of the beautiful grass land, being strip mined.

379

I feel this type of land should never be mined, for many different reasons.

The over burden is extensive and would seem a great expense for the coal company and such a waste.

I hope that you will give this great thought, before making a decision. Thank You

Fern Hardy Laughery

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42

1123 N. Broadway
Billings, Montana 59101
July 12, 1983

Jerry Jack
BLM District Manager
Billings Resource Area
810 E. Main
Billings, Montana 59101

Mr. Jack:

I am writing to express my opposition to further leasing of federally-owned coal in the Bull Mountains.

I grew up on a ranch in the coal area of the Bull Mountains and presently hold an interest in the family ranch corporation there.

380 Additional leasing of this coal is totally unwarranted. First, national demand for coal has decreased. Second, coal companies have already tied up leases far in excess of foreseeable coal production. Therefore, leasing more coal at this time makes little sense.

381 Furthermore, leasing the Bull Mountain coal for strip mining makes even less sense in view of the narrow seams, high overburden ratio, potential aquifer damage, and dim prospects for adequate reclamation of mined areas.

Sincerely,

Patricia Oertli

Mrs. Patricia Oertli

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44

TO Mr. Jerry Jack

Waste Systems
BROWNING—FERRIS INDUSTRIES OF MONTANA INC
CITY DISPOSAL CO
BOX 8449
MISSOULA, MT 59807

SUBJECT Sale of Public lands DATE 7/11/83

I am totally opposed to the Sale of our public lands. My views are the same as those of the Montana Wildlife Federation

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Sincerely

MAX Bauer Jr
7250 Devonshire Lane
Missoula, Mt. 59801

SIGNED

43

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PLAN ___ ___

July 12, 1983

Dr. James A. Pickard
P.O. Box 854
Wolf Point, Montana 59201

Mr. Jerry Jack
Area Manager
Billings Resource Area
810 Main
Billings, Montana 59101

Dear Mr. Jack:

382 I want my comments regarding public lands in general, and BLM lands in specific, to be a matter of record. I am totally opposed to the sale of any BLM lands. I would not oppose land exchanges which obtained land of more public value or consolidated BLM holdings to form larger public tracts. There should be an evaluation of each tract recommended for exchange with an opportunity for public comment.

383 Initially, these lands were proposed for sale as a means of reducing the national debt. The amount that could be raised is so insignificant, compared to the national debt, that this rationale has very little validity. The inescapable fact is that once these lands are sold, they are gone forever from public use. Public land is a large part of the heritage of the west.

I ask that you please act in the best interest of the majority of the American people and retain BLM and other public lands for our use and the use of future generations.

Sincerely,

James A. Pickard

James A. Pickard, O.D.

JP:jmp

45

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P.O. Box 624
Lounsdale, Mt
59072
July 13, 1983

Dear Sir,

This letter is written to express our opposition to any strip mining of coal in the Bull Mountains

384 We are senior citizens who have our life savings invested in our home which we built in the Bull Mts, and are afraid of what would happen to our water if strip mining was allowed. If our water became polluted or disappeared, who would replace the well?

385 We understood that no coal mining was allowed here as the area was considered too fragile. Hoping you will give these matters consideration.

Thank you.

Sincerely,

Mrs. Eileen Schmidt

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46

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PLAN ___ ___

3639 Sourdough Road
Bozeman, MT 59715
July 12, 1983

Mr. Jerry Jack, Area Manager
Billings Resource Area
810 Main
Billings, MT 59101

Dear Mr. Jack,

We are writing to express our strong opposition to the plan for disposing of public lands. This dangerous, short-sighted policy threatens the legacy of public lands that belong to all of us.

386 Enhancing opportunities for subdivision of lands should never be a goal of public land disposal. We have always enjoyed a sense of security about the management of our natural resources in this country under that management of the BLM. We have taught our children that preservation of public lands is an important legacy that we leave for them and that they in turn should leave for the next generation.

387 Of course, some transfers and exchanges have always taken place, but we assume they were done to maximize public values. Those being considered at present are, to the contrary, being done without regard for public values. The BLM should conduct an assessment of each proposed tract to determine the resource value of the tract and its role in the maintenance of our wildlife and other natural resources. Public involvement in each step of this program is essential.

We in Montana especially resent being used as an experimental model for lands disposal nationwide. Because of our low population density and consequently lower number of public watchdogs, there is a greater burden on each of us to speak out.

Thank you for your very careful consideration of the importance of preserving our public lands.

Sincerely yours,

Michael K. Wells

Phyllis J. Wells

48

DEPT OF INTERIOR
BUR. OF LAND MANAGEMENT
1983 JUN 15 AM 11:02

June 13,1983
2101 Fox Drive
Bill nge,59102

Bureau of Land Management
State [illegible] Granite Tower
Billings 59101

To whom it may concern:

391 I would like to express my opinion about what the future of the South Hills should be. In my opinion this land should be set aside for a county park that all residents can enjoy. as Billings grows larger and more housing is built in the area the noise and dust from the current off road vehicle use will become increasingly intolerable. Now is the time to find an alternative site for off road vehicle use and preserve this wonderfull peace of land for all the residents of Billings to enjoy.

Thanks for the oportunity to express my thoughts.

Sincerely yours,

Bob Chamberlin

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ACTION
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47

Box 347
Roundup, Montana 59072
June 27, 1983

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Jerry Jack
BLM Area Manager
Billings Resource Area
810 East Main St.
Billings, Montana 59101

Dear Sir:

I am writing as a concerned resident of the Bull Mountains, who is hearing growing rumors about strip mining for coal by various large corporations.

388 I feel strongly opposed to this potential for two reasons. First of all, I know from experience that coal mining in whatever form lowers the water table of the area. I am speaking from personal experience, since I was raised the first thirteen years of my life on a ranch sixteen miles south of Roundup on the old Billings highway. There were a number of small coal mines operating at the time including the Carlson Mine (now called the Blue Flame Coal Mine), and the P.M. Coal Mine, and our family coal mine, The Gildroy Coal Mine. I know our home could only function on two wells, both approximately 300 feet in depth. I can remember one well only being used for drinking and the other for watering purposes. It would run for ten minutes and shut off for an hour. I can never remember taking a bath in over six inches of water. My point is not to belabor my childhood but to state that wells in that area are a lot deeper than where I currently live, which is southwest of Roundup on West Parrot Creek. We have one of the deepest wells and it is only 165 feet deep with a seemingly abundant supply of water. But there is no mining, to this point, in the area.

389 The second point is that the Bull Mountains is a very dry area and ecologically fragile. The damage done all over the country by aggressive, hurried mining operations only leads me to believe that mining and the lowering of the water table could by very detrimental ecologically to this already vulnerable area. It may not be noticeable at first, but we do not know what kind of water crisis we could be creating for future generations.

390 To sum it up, my wife and I feel strip mining would be financially hard on the residents as far as new wells are concerned or drilling deeper ones and it would definitely be devastating to both wildlife and domestic livestock. We feel it is unfair for one major operation to disrupt and devalue the harmony of the community.

Sincerely yours,

Gordon Gildroy

Mary Ann Gildroy

49-1

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July 6, 1983

Bureau Of Land Management
Billings Resource Area
810 E. Main
Billings, Montana 59105

Dear Sirs:

Concerning the AhNei Public lands, we feel there is much misuage, due to lack of proper control and enforcement of present regulations. Off road vehicles do not stay on existing trails percipitating excessive erosion. Liter is constrewed without regard to fellow recreationists. Trees have been illegally cut for fireweed. In one instance, evidence shows where a tree was burned in situ, posing a serious threat to nearby vegetation and fenced in livestock. Water tanks and pumps have been shot up and parts have been stolen. A bull was shot to death about five years ago. Hunting is unsafe as there are so many hunters mixing with others,. such as hikers, motorcyclists, and horseback riders, in such a small area.

392 Due to the existence of these circumstances coupled with the rise in the nearby population and the ever increasing awareness of this tract of public land, we propose that a patrol officer be commissioned to control and enforce existing laws. We feel his presence would soon put an end to the

-1-

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392 cont. offenders, making the area more enjoyable and useful to all parties concerned.

Your consideration would be sincerely appreciated.

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RESPONSES TO COMMENTS AND LETTERS

1.

The first paragraph on page 24 of the draft RMP refers to maintaining wilderness objectives under the Existing Management Alternative. Wilderness values could not be maintained under existing management in the long term. Even though existing management direction in both Twin Coulee and the Pryor Mountain units has been directed toward preservation of wild land values, the alternative could not guarantee long-term maintenance of wilderness characteristics. If the lands were released to other than wilderness management, there is no assurance that existing wilderness values would not be negatively impacted.

2.

Final rulemaking for 43 Code of Federal Regulations (CFR) 3809.14 provides that:

> "a properly filed notice affecting 5 acres or less and any plans of operations properly filed and approved, will constitute authorization for the use of off-road vehicles, avoiding the need to acquire separate authorization for such use."

Therefore, the BLM feels that a boundary adjustment would not be necessary.

3.

BLM could find no conclusive technical data regarding relative forage consumption rates of cattle and wild horses. It is generally agreed upon by knowledgeable persons that horses do consume more forage than cattle under similar conditions. The National Range Handbook published by the U.S. Department of Agriculture, July 13, 1976 recommends a 1.25 Animal Unit Equivalent for horses in part 802.1. Additionally, the National Academy of Sciences, Final Report (1983) on Wild and Free Roaming Horses and Burros states on page 28, paragraph 2:

> "Although some need further research, results from this study carry potentially important implications for wild horse management. Findings on consumption rates add support to the practice noted in the Phase I Report (see page 97) of attributing an animal unit equivalent of 1.25 to mature horses. Although this value appears high in light of the current Colorado results (i.e., an average 14 percent greater forage consumption by mares), unreported evidence suggested that the 14% difference was conservative (L. R. Rittenhouse, personal communication, 1982). The difference appeared to hold over a fairly wide range of forage quality conditions."

4.

One objective of this alternative is to strive for a sex ratio approaching 50-50. This would slow the reproductive rate as you point out. However, sex ratio is only one criterion used in determining which horses are to be removed. Conformation, color, and other characteristics that typify the Pryor Mountain wild horses will also be considered. Due to the isolated nature of this horse herd, it is necessary to be selective when removing horses or the concentration and/or elimination of a certain gene pool could occur, thus contributing to the problems you point out. The BLM's selection criteria is designed to minimize these problems.

5.

The high level alternative would involve considerable manipulation of the wild horses. This alternative would provide for the most rapid response in improving the vegetative condition, thus potentially increasing the number of horses the PMWHR could support. However, due to the unacceptable impacts to the wild horses as outlined on page 149 of the draft RMP/EIS, this alternative was not chosen as a preferred course of action.

6.

A reference to long-term significant impacts on wild horse management as a result of wilderness designation was made in the third paragraph on page 160 of the draft RMP/EIS. This reference to impacts was overstated. The BLM's Preferred Level Management Alternative recommends wilderness designation for the Pryor Mountain and Burnt Timber Canyon units. The only potential impacts on wild horse management would be the location and type of new range developments which might be allowed. Any such facilities would have to be installed so as not to impair wilderness characteristics. In reality, the Preferred Level Management Alternative would ensure continuation of a healthy wild horse herd, which BLM construes as a major supplemental value of wilderness.

7.

See Response #6.

8.

The BLM agrees that wild horse management in conjunction with wilderness management is compatible and that the two management themes should, in fact, enhance one another.

9.

The proposed fences would include a 2 mile wing fence in the Britton Springs area and the remaining 5 miles would be located along the south boundary of the horse range between Britton and Sykes Springs. The wing fence would help facilitate capture operations. The intent is to reduce the time and cost of capture and, hopefully, reduce some of the stress the horses are potentially subjected to during capture operations. The south boundary fence is needed to keep the wild horses from drifting onto private lands along Crooked Creek as well as to keep them off the county road to reduce the potential of injury from vehicles.

Costs of the fences are displayed in Appendix 2.1, final RMP/EIS.

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10.

The water catchments are needed to improve distribution of the horses by increasing the availability of water. They can be used to selectively influence the areas the horses use during various times of the year. Areas that traditionally receive heavy use adjacent to water sources are provided some relief by fencing off the water, thus forcing the horses to other areas. This method would subject the horses to very little stress while improving range condition through deferment of selected areas.

11.

To assure that non-public lands remain available to wild horses, the United States should acquire 1,560 acres from the State of Montana, and 680 acres of privately-owned land presently being utilized by the wild horses (see Map 1—Map Pocket). The State of Montana supports BLM's efforts to consolidate their land holdings within the Pryor Mountain Wild Horse Range (PMWHR) to facilitate management of the area. The Department of State Lands has listed for possible exchange, the State Trust Lands within the PMWHR.

12.

To date, no special budget allocation has been authorized for the Land Tenure Adjustment Program. Therefore, all work months and other costs associated with the program have been charged to the general Lands program. Without a separate project code to charge against, it is impossible to separate out the costs that are strictly related to Land Tenure Adjustment.

13.

There are certain administrative costs associated with management of "isolated" parcels. For example, a grazing authorization and bill is issued annually. Also, any proposed action affecting these parcels (rights-of-way, range improvements, etc.) must be processed and evaluated before authorization.

14.

Section 203 of the Federal Land Policy and Management Act (FLPMA) provides for three types of land sales—open competitive bidding, modified competitive bidding, and direct noncompetitive sales. A decision on the method of sale and a determination of whether any individual will receive preference in the sale is made on a case-by-case basis, and takes into account such factors as the size and location of the parcel, public access, adjacent landowners and land uses, and other pertinent information appropriate to the case. In addition, land sales and exchanges are subject to valid existing rights at the time of disposal.

15.

The BLM's Proposed Action for land tenure adjustment (High Level Management) states that priority consideration would be given to land exchange proposals which facilitate improved public land management, provide for acquisition of desirable fish and wildlife habitat, provide public access, recreation opportunities or may expedite future mineral development (see Proposed Action for Land Tenure Adjustment, Chapter 2, final environmental impact statement (FEIS)).

Also, see discussion of the Environmental Assessment/Land Report (EA/LR) process in the Proposed Action Section for Land Tenure Adjustment.

16.

During the public participation and scoping process, 13 issues were identified within the Billings Resource Area. To adequately address these issues, formulate alternatives and assess the impacts of each alternative, and consistently follow a set of regulations and procedures, a detailed and complex document is necessary. This RMP was not developed to confuse the public, but rather to provide the land manager a means to anticipate, and plan for, the future public needs from the BLM lands in the Billings Resource Area.

17.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

18.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

18.

Surveys, as such, are prohibited by the Office of Management and Budget. To undertake one would be extremely costly and time-consuming. However, in accordance with the general provisions of Section 202(f) of FLPMA and more specifically the requirements of 43 CFR 1610.2(e), the BLM provides a 90 day comment period following publication of the draft EIS during which time, persons who wish to comment on any aspect of the land use plan are provided a means for that expression. In addition, prior to any specific land sale or exchange, BLM regulations provide for a 45 day comment period (refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS).

20.

Refer to Response #16.

21.

The BLM is not considering a jurisdictional transfer of the southern portion of the Big Horn Tack-On to the National Park Service. This area is an integral portion of the designated PMWHR. The BLM is the lead agency for wild horse management in the Pryor Mountains. The road which forms the western boundary of the Big Horn Tack-On is essential to the future management of the horse range by providing access to artificial water sources which require periodic maintenance and wild horse traps.

22.

Refer to the Proposed Action for Final Wilderness Suitability Recommendations and Rationale in Chapter 2, FEIS.

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23.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

24.

The BLM recognizes that in many cases, relatively small, isolated tracts of native vegetation do provide a much needed and valuable wildlife habitat resource. In reference to the site north on Highway 87 (Tract 58R), our initial evaluation of the site identified the area as being used yearlong by pronghorn antelope for feeding and bedding purposes. We also identified active sage grouse dancing grounds on and adjacent to the parcel and evidence of use by sharptail grouse was noted. It was also recognized that the parcel receives use by both recreationists and wildlife interest groups. Unfortunately, the area is also frequently abused by target shooters and other publics scattering and dumping garbage. Numerous antelope and sage grouse carcasses have also been found throughout the area. This creates not only an eyesore, but poses the potential for a serious safety hazard. A signing program was initiated asking for public support in keeping the area clean with no favorable results.

It is because of the obvious resource values and heavy public use that we have proposed to retain the tract. However, we also recognize its potential for exchange with other lands with equal or greater wildlife and recreational values if such an action would provide an area which could be managed more cost effectively and still be of high value to the public.

25.

The intent of paragraph 6, page 4 is to alert the reader that not all elements of the wildlife program would be discussed in detail. Much of the day-to-day coordination and environmental assessment activities required by law will not be changed through the planning process. Additionally, small habitat improvements, some of which were mentioned, have no significant impact on other programs and were therefore not considered an issue requiring extensive analysis.

26.

Refer to Issues Considered in Land Use Plan Alternatives, Land Tenure Adjustment, Chapter 1, FEIS.

27.

The BLM Montana State Office maintains a staff of certified land appraisers who determine, on an individual basis, the fair market value of a particular tract using recognized appraisal methods and standards. The appraised fair market value of that tract of land then becomes the lowest acceptable bid at a public land sale.

28.

Refer to Response #14.

29.

Any coal exchanges that might occur would be examined on a case-by-case basis. Where checkerboard coal ownership occurs, it may be in the public interest to acquire minerals ownership so that a lease can be offered as a whole. This increases the competitiveness of a tract as a bidder has to deal with only one mineral owner. It is beyond the scope of this document to determine if Burlington Northern would receive unfair economic advantage from a coal exchange.

30.

Refer to Response #16.

31.

The BLM is not certain where the figure of 3,242 acres came from. Under the given scenario of a 300,000 ton/year surface mine in the Bull Mountains, 357 acres would be disturbed over the next 25 years (3 acres/year short term, 18 acres/year long term).

The BLM cannot locate this speculative mine on a map at this time. There are too many variables for a mining company to consider, and no leases have been analyzed or offered.

These 9,535 acres (9,360 acres as amended in this document) are described as suitable for further consideration for leasing pending application of the wildlife and cultural coal unsuitability criteria. During the activity planning phase which follows the completion of this RMP, lease tracts may be nominated by industry in a "Call for Expression of Interest" or the Powder River Regional Coal Team may decide to delineate a tract for competitive lease offering. The maps and text have been changed to clarify the coal planning process in the final RMP/EIS (see Coal Alternatives, Chapter 2, final EIS).

32.

Landowner response was considered to be significant when contiguous sections of Federal coal were affected by negative surface owner views. In the Bull Mountains, where small operations have historically operated, one section of coal could support a projected 300,000 ton a year mine for approximately 38 years.

Maps have been provided which specifically display the 9,360 acres suitable for further consideration for surface coal leasing (see Coal Alternatives, Chapter 2, FEIS). Please note that additional acreage was eliminated from further consideration when significant negative landowner response blocked out large portions of the area. The acreage figure here has changed from the 9,535 acres given in the draft EIS. This is due to the fact that leases are issued by legal subdivision. The figure does not affect the total tonnage of coal available.

33.

Consolidation Coal Company does not meet the definition of a qualified surface owner as defined in Sec. 714 of Surface Mining Control and Reclamation Act (SMCRA).

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34.

It is true that construction of a rail spur into the Bull Mountains could cause environmental and social/economic impacts. However, these impacts were only discussed in a general manner, since there is no way to predict when or where a rail spur might be built. Specific impacts would be discussed in the evaluation of a mine plan.

35.

Hauling of coal by truck is only an efficient method of transportation when tonnages produced are fairly small (250,000 ton/year), and the distance the coal is moved is small.

Should a mining company select this option to get the coal to market, it would have to build new roads or upgrade existing roads. Fencing these roads off would be a practical method to safeguard livestock. With the tonnages anticipated in the hypothetical scenario given (300,000 ton/year at maximum capacity) trucks probably would not be mining night and day.

36.

Analysis of probable impacts indicate that coal mining at the levels projected in the two scenarios would not result in significant impacts to wildlife or other resources. The BLM could not, therefore, eliminate more land from further consideration due to anticipated multiple use resource conflicts.

Current research indicates long-term impacts to groundwater quantities and quality would not be significant, except in proximity to mined areas. State and Federal regulations require a mining company to replace water sources that are lost.

Federal and state regulations require that surface mined areas be returned to productivity. A mining plan would not be approved unless there is a reasonable probability that the lands may be reclaimed.

37.

A site-specific lands report and environmental assessment must be completed prior to any public lands being sold or exchanged. Lessee dependency on public lands will be closely examined. It is extremely unlikely that any public lands would be disposed of if such a transaction would create an economic hardship for the lessee.

38.

Refer to the Proposed Action for Land Tenure Adjustment, Chapter 2, FEIS.

39.

Refer to the Proposed Action for Final Wilderness Suitability Recommendations and Rationale, Chapter 2, FEIS.

40.

The Tillett Ridge Road is essential for wild horse management purposes and also provides recreational access. The joint land use decisions of the Forest Service and BLM dated May 23, 1974, page 32, states "Vehicle access will be limited to the designated system of roads. Within PMWHR, vehicle access will be limited to the Tillett Ridge Road and the Sykes Ridge Road. All other roads will be closed."

41.

Refer to the Proposed Action for Final Wilderness Suitability Recommendations and Rationale, Chapter 2, FEIS.

42.

Cliffs are just one of many special habitat features which receive an intensive wildlife evaluation prior to any disposal or exchange action. This evaluation would identify any current use such as nesting raptors and would also predict future potential significance to the wildlife resource. A survey by the Montana Department of Fish, Wildlife and Parks (MDFWP) would also be requestad.

43.

Refer to the last sentence of Response #14.

44.

The BLM plans are not permanent documents. Public opinions change, demands upon resources change, and government programs change.

The adoption of the new "Coal Management Program" by the Secretary of the Interior in 1979 required the BLM to evaluate the coal resource under new areas are acceptable for further consideration for leasing. Coal development remains an important issue, both locally and nationally.

45.

Recoverable coal in the Bull Mountain Field is admittedly less than that of eastern Montana coal fields. The coal beds are thinner and overburden increases more rapidly in the Bull Mountains than in eastern Montana coal fields. However, the quality of the coal in the Bulls is somewhat higher than the subbituminous coals of Big Horn County, and has significantly higher BTU values than the lignites of eastern Montana.

46.

Seventeen thousand and seven hundred tons per acre was derived by averaging the measured thickness of the coal beds across the field, and multiplying this figure by 1,771 tons per acre/foot, the average density of subbituminous coal. Obviously, this is coal in place. Actual recoverable usable coal will be lower.

Consolidation Coal Co. opened its test pit at a location where the Mammoth-Rehder Coal Bed is thinnest.

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47.

Current recovery ratios are based on the depth a company can surface mine and still produce profit. In the Powder River Coal Production Region (subbituminous coal) average ratios are 4 to 1 for West Decker and 5 to 1 for Western Energy. In the Fort Union Coal Production Region (lignite coal) a company may go to a 10 to 1 ratio if the coal is being transported to an onsite power plant and no shipping costs are involved. In the Bull Mountains, the Divide Mine is currently operating at approximately a 7.5 to 1 ratio.

Actual area damaged by recovery of Mammoth-Rehder Bed is similar to other operating mines given its higher quality.

48.

Refer to Response #44.

49.

Refer to the Proposed Action for Land Tenure Adjustment, Chapter 2, FEIS.

50.

Refer to Response #15.

51.

Refer to the Proposed Action for Final Wilderness suitability recommendations and rationale, Chapter 2, FEIS.

52.

None of the areas recommended as suitable for wilderness designation in the BLM's preferred alternative contain grazing permits. Of those areas recommended non-suitable in the draft, only Twin Coulee contains commercial livestock grazing. The leased area encompasses 600 acres near the eastern boundary of the wilderness study area (WSA).

53.

While the potential for oil shale reserves was a consideration for the non-suitable recommendation for Twin Coulee, it was not the sole reason. The resource value of Twin Coulee for small scale commercial logging, BLM's determination that the area does not contain outstanding recreational opportunities and the fact that the area would not add diversity or uniqueness to the National Wilderness System were all considerations in the recommendation.

The BLM, by law, must reexamine all resource values in WSAs, since development of these resources may conflict with wilderness designation. Mineral resource potential must be evaluated to determine what values might be foregone should an area be designated wilderness.

Heath "oil shales" may be found in the vicinity of the Twin Coulee WSA; they do not lie within the WSA. Refer to Proposed Action for Wilderness final decision rationale, Chapter 2, FEIS.

The Twin Coulee WSA would, upon designation, be essentially closed to mineral development. The only mining claims located within that WSA were located after passage of FLPMA, and therefore, mining claimants may not impair wilderness suitability.

Mining ventures have always been sensitive to market values and costs of mining. A recent report by the Montana Bureau of Mines and Geology states that mining the "oil shale" bed of the Heath Formation is presently not profitable, when mineral and syncrude values are weighed against probable mining costs.

54.

The Pryor Mountain WSA and a portion of the Burnt Timber Canyon Wilderness Study Unit (WSU) have been recommended for wilderness designation. Refer to the Proposed Action for final wilderness suitability recommendations and rationale, Chapter 2, FEIS.

Response #40 of the Billings Public Hearing transcript addresses the need for the Tillett Ridge Road which serves as the boundary between the Burnt Timber Canyon and Pryor Mountain areas.

55.

The wilderness suitability decision for the Big Horn Tack-On has been modified in the final RMP/EIS. Refer to the Proposed Action for Wilderness decisions and rationale, Chapter 2, FEIS.

56.

The methodology used in arriving at a stocking rate for the PMWHR is displayed in Appendices 2.9 and 2.10, of the FEIS. The proposed action selected a target number of horses and course of action that the BLM believes will result in maintaining a viable horse herd and improving range conditions on the horse range.

57.

Refer to Response #44.

59.

The BLM is not aware of any regulations concerning noise nuisance on non-wilderness public lands. The BLM has formally closed a 70 acre area adjacent to the housing subdivision to serve as a buffer between the homes and the off-road vehicle (ORV) use area. The BLM is also planning to close the entire 1,200 acre area to 4-wheeled vehicles. Refer to the Proposed Action for ORV Use, Chapter 2, FEIS. The 1,200 acre area would remain open to motorcycle use, however.

The ORV use in the South Hills has existed for some time and predates the subdivision of neighboring privately-owned land. There are no "easy fixes" where ORV use and neighboring landowner objections to that use occur. The BLM feels that use impacts are within acceptable levels based on soil characteristics, vegetative conditions and other use demands.

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59.

Administration of the proposed partial closures will depend to a great degree on available manpower and funds. Every effort to administer these closures will be made within fiscal constraints including, but not limited to, public affairs efforts, site inspections and signing. The BLM will continue to work with both the users and the local landowners.

60.

Local law enforcement officials do not have enforcement jurisdiction on Federally administered lands, but can serve as witnesses just as any private citizen does. The BLM does have one Federal law enforcement official on call in the Billings area.

The additional closure of the South Hills to 4-wheeled vehicles is being proposed, in part, to reduce enforcement problems.

61.

Refer to Response #58.

62.

Refer to Response #59.

63.

In 1980, the Cedar Park Homeowners' Association agreed to maintain the west boundary fence. This agreement has remained in effect. During the last 3 years, BLM estimates that approximately 150 hours have been spent repairing the fence in question, by BLM personnel.

64.

Since its inception, the BLM has had the authority to sell or exchange land. In 1976, the passage of the FLPMA reaffirmed that authority. In addition, it provided for public comment periods prior to any land sale or exchange.

The process the Bureau uses is clearly spelled out in FLPMA and the Code of Federal Regulations. These allow for a 90 day comment period for persons wishing to respond to a public land use plan, and in addition, the public is invited to comment on any specific land sale or exchange for a 45 day period prior to that transaction.

65.

The U.S. Congress regulates how the monies raised from public land sales are distributed. The funds are distributed as follows:

76%—Reclamation Fund
20%—General Treasury Fund
4%—State

Any change in how the funds are distributed would require Congressional action.

The Reclamation Fund consists of dedicated monies used by the U.S. Bureau of Reclamation for reclamation project purposes. Therefore, under current law, only 20% of funds (General Treasury) derived from public land sales would be available for application against the national debt. Current Administration policy is not to promote public land sales in order to retire the national debt.

66.

The BLM does sign major access routes to well-blocked public lands. Many of the public lands in Montana are small isolated parcels and a signing program to identify all BLM tracts would therefore be impractical. Some parcels are surrounded by privately-owned lands and access to the public lands are at the discretion of the private landowner.

67.

Refer to Responses #14 and #27.

68.

Refer to Response #44.

69.

The wilderness alternatives presented are not tailored to fit a particular management philosophy, but are levels of analysis that best fit under a management theme for analysis purposes.

Alternative or management themes which reflect the commonality under which resource activities are discussed by alternative are expressed under each major alternative heading in Chapter 2, FEIS.

The approach used in the Billings RMP for structuring wilderness alternatives also reflects the BLM's Wilderness Study Policy in that at least the following alternatives for wilderness suitability are to be analyzed:

1. All Wilderness—An alternative which analyzes the environmental, social and economic impacts of including all areas under wilderness study for inclusion within the National Wilderness Preservation System (NWPS).
2. No Wilderness—An alternative which recommends that none of the areas under wilderness study be recommended for wilderness designation.

70.

Refer to the Proposed Action for Wilderness for the final wilderness suitability recommendation and rationale for the Big Horn Tack-On, Chapter 2, FEIS.

71.

The word "median" has been deleted from the final RMP. The Bureau recognizes its obligation to other agencies and landowners within the area used by the horses and the adverse consequences a widely fluctuating horse population would have on other resources. Refer to Response #342.

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72.

This has been reworded to reflect your concern in the final RMP/EIS.

73.

The PMWHR is considered "sensitive" to oil and gas leasing. Should the Billings Resource Area receive an application for a lease within the horse range, a site-specific environmental assessment to develop appropriate stipulations for the protection of wild horses, fragile habitat and visual resources, would be performed. Since directional drilling would not be feasible, no leasing would be recommended for the "core" of large areas for which no surface occupancy is stipulated.

National Natural Landmarks are, of course, considered sensitive areas. The BLM will add the Bridger Fossil area and Cloverly Formation Site to its list. (The Crooked Creek Fossil area lies within the larger PMWHR sensitive area.)

Cultural sites are protected from destruction by oil and gas operators through a standard stipulation attached to all leases. This stipulation requires an inventory or clearance before exploration may ensue. All cultural sites would be avoided.

The 43 CFR 3809 (surface management of unpatented mining claims) regulations do not specifically address paleontological sites, though they do require inventory and avoidance or salvage of significant cultural sites. The BLM would work with an operator or claimant to ensure protection for sites, through avoidance of valuable sites.

74.

The BLM appreciates receiving the complete list of designated and potential National Natural Landmark sites within the Billings Resource Area. Those sites which occur on BLM administered lands in this resource area have been added to the sensitive areas listing and overlay in the final RMP/EIS. See the Appendices section for a list and the "Sensitive Areas" Map Overlay in the Map Pocket. The ecological/geological features of these areas will be protected by the addition of protective lease stipulations when necessary.

75.

This correction has been made in the final RMP/EIS.

76.

This classification has been noted under Soils/Watershed, Chapter 3, FEIS.

77.

Refer to Response #84.

76.

The BLM is in agreement. See Proposed Action for Wilderness, Chapter 2, FEIS.

79.

The sentence "This would be viewed as a median to be maintained over the short term (8 years)" has been deleted in the final RMP/EIS. A yearly wild horse excessing program is essential in maintaining a viable horse herd and improving range condition, and the BLM will attempt to maintain the target allocation of 121 head of horses.

80.

The BLM agrees with your comment. This has been restated in the final RMP/EIS.

81.

Seventy thousand acres within the Billings Resource Area, of which 36,600 acres are part of the designated PMWHR, have been identified "sensitive" to oil and gas leasing. Lease applications within these areas would be routed to the resource area for application of appropriate special stipulations. Assessment may determine, especially within the PMWHR, that some areas are unsuitable for oil and gas exploration and subsequent development. Where "no surface occupancy" is recommended for an area over ½ mile from an area which may be occupied, the resource area would instead recommend no leasing (since directional drilling could not tap a possible reservoir under that land). Occupancy in other areas may be severely restricted.

82.

An inventory to identify historic or prehistoric sites or features would be conducted in areas proposed for any surface disturbing project. If cultural resources significant enough to be eligible to, or listed on, the National Register of Historic Places are encountered, the project may be relocated or the impact to the remains may be mitigated according to current standards established by the Advisory Council on Historic Preservation (1980).

83.

This has been corrected in the FEIS.

84.

The BLM acknowledges that this 160 acre parcel is NPS land, but due to printing cost, it is not feasible to correct this map.

95.

Changes have been made in the FEIS to reflect these concerns. (Refer to Threatened and Endangered Species, Chapter 3, and Responsibilities Common to All Alternatives, Chapter 1).

86.

Specific tracts have not been identified along the Yellowstone River for acquisition purposes. The draft RMP was used as a means of expressing BLM's interest in such acquisition through land exchanges. If acquisition opportunities are presented to the BLM, a EA/LR is completed at that time. This action requires that a 45 day public comment period occurs. Consultation with the U.S. Fish and Wildlife Service (USFWS) can occur during this time period.

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87.

Refer to Response #85.

88.

Refer to Response #85.

89.

The BLM will not issue coal leases through this planning document. However, this office is recommending that certain areas either are or are not suitable for further consideration for leasing pending further study and full application of the unsuitability criteria. Unsuitability criterion 7 and 9-15 were not applied at this planning level due to lack of adequate inventories. See the Appendices section (FEIS) for a listing of available data and data to be collected. Inventory efforts will be initiated in FY-84 if funding is available.

90.

Refer to Response #89.

91.

There are no areas currently in native vegetation that are being considered for conversion to crested wheat pastures. All these areas are either composed of old, stagnant monotypic stands or intermixed with undesirable species such as snakeweed and red three awn.

The objective is not to create a monotypic situation, but to reintroduce a diversity of plant species to improve livestock forage as well as wildlife habitat. The BLM feels that this type of vegetative treatment does not conflict with multiple use concepts of management but, in fact, enhances the overall quality of the environment by providing diversity for wildlife while deferring domestic livestock on native range. Additional fences may be required to confine use to these areas.

Livestock use would not be authorized at a continuous high level that would eventually reduce the pasture to a monotypic situation. Wildlife objectives would be maintained as well as other multiple use objectives.

The 1,700 acres of native range to be renovated would be reseeded to native species or if an adequate seed source of desirable plants were available the area would naturally revegetate.

92.

Refer to "Methodology for Controlled Burns," Appendices section, FEIS.

93.

The assessment of condition of all 41 miles of identified woody floodplain vegetation has not been completed. Please refer to Response #6 for an explanation of our ongoing efforts to update existing allotment management plans (many of which fall in the "M" and "C" range categories) and BLM's approach to the development of new allotment management plans (AMPs) which ensures inclusion of specific wildlife habitat management objectives.

94.

Until the allotment specific evaluations are completed as outlined in Response #160, we cannot accurately identify our short- and long-term objectives which BLM will be striving for on an allotment basis. The objectives will, however, include specific treatment proposals for the protection and enhancement of all wetland, riparian and woody floodplain habitat types.

95.

Refer to the Proposed Action for Land Tenure Adjustment and Recreational Access in Chapter 2, FEIS.

96.

Refer to Response #169.

97.

The proposed action does propose considerable treatments and range improvements for the "M" and "C" allotments. However, they are at a lower priority since the problems or conflicts identified were not as serious as those in the "I" allotments.

Reductions in animal unit months (AUMs) may not improve conditions on the primary use areas since livestock would continue to concentrate around water sources and other preferred areas. Reduction of numbers would, of course, shrink the size of these areas. There are certain range sites that will have a very slow response to grazing management. Examples of these include clay pans, dense clay and saline uplands. Finally, in many of these areas the land pattern is such that BLM's influence on management is minimal.

98.

Refer to Response #168.

99.

This is correct. The legend has been corrected in the final RMP/EIS.

100.

Yes. The coal which has high to moderate development potential lies between the outcrop and high to moderate potential line on Figure 3.5.

101.

Perhaps it would have been more specific to have said Red Lodge area rather than field. This has been changed in the final RMP/EIS.

102.

This is correct. The heading has been changed in the final RMP/EIS.

103.

The McCleary and Mammoth-Rehder Coal Beds both lie within the Bull Mountain Coal Field.

The Divide (Blue Flame Coal) Mine lies in the SW¼, Sec. 24, T. 6 N., R. 26 E., and the PM Coal Mine lies in SW¼, Sec. 13., T. 6 N., R. 26 E. (Both mines are in the Mammoth-Rehder Coal Bed, Bull Mountain Field.)

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The Consolidation Coal Company test pit was opened near the outcrop of the Mammoth-Rehder Bed in SE¼, Sec. 3, T. 7 N., R. 26 E.

104.

This is correct. Both areas have Class II air quality designations. This has been corrected in the final RMP/EIS.

105.

Refer to Wildlife Assumptions, Chapter 4, and Methodology for Controlled Burns, Appendices section, in the final RMP/EIS.

106.

Refer to Response #185.

107.

The Billings Resource Area considers the protection, and enhancement of riparian and woody floodplain vegetative types a priority in all management actions and decisions. Our objective is to stabilize these vegetative communities in at least good ecological condition which will reduce streambank erosion and limit upland runoff sedimentation into active waters.

The BLM concurs that monitoring of water chemistry and sediment yield levels is essential in order to evaluate the effectiveness of this effort. We currently have water quality monitoring stations located in perennial waters which originate on or pass through large blocks of public land and tribute to major water systems. Sediment yield levels and water chemistry data are collected at regular intervals at each station.

108.

Mitigating measures will be developed through analysis of the proposed mine plan submitted by the coal lessee. The RMP is not a document designed to lease and mine coal.

109.

Burning techniques will vary depending on topography, fuels and burning objectives. Burning projects will be identified in AMPs and will, to the extent possible, be identified to meet multiple use objectives. A detailed burn plan which includes burning techniques required to meet these objectives will then be developed. The burn plan will normally include the following: (1) Resource objectives that apply, (2) burn objectives, (3) fireline required, (4) weather and fuel moisture parameters, (5) time of the year or growth stage, (6) firing method and pattern, (7) equipment and personnel needs, (8) cooperator contributions, (9) per acre costs, (10) rehabilitation (if any) and (11) post burn monitoring.

The AMP will spell out the pre and post burn grazing management. Normally, deferment will be needed prior to burning to provide enough fine fuels to carry the fire. Deferment will also be needed following the fire to allow for reestablishment of desirable perennial species. As you suggested, reseeding may be needed on some areas. Our observations of burned sagebrush areas in the resource area show excellent response by perennial grasses and forbs without reseeding. It may be desirable, however, to seed native species on some depleted areas within burns and compare results to unseeded adjacent areas to determine the need for reseeding.

110.

Refer to Response #91.

111.

The Billings Resource Area currently has established 176 permanent transects to monitor trend in vegetative condition. The method used is a Daubenmire canopy coverage 300 foot, 30 plot transect. This transect can be duplicated and is normally read whenever the cycle is such that the particular pasture is being rested.

Additional monitoring techniques include records of actual livestock use, climatic conditions and utilization measurements. Actual use and utilization are very important components in evaluating the objectives of the allotment. When estimating utilization, the allotment is first stratified as to degree of use, then measurements are taken within these stratifications using the Lommason-Jensen height/weight relationship method.

The "I" category allotments will receive the majority of attention to ensure the objectives as set forth to resolve the conflicts are being met. The "M" and "C" allotments in most cases will only be monitored at an intensity to detect problems or conflicts that may arise.

112.

On July 7, 1983, the Montana State Director issued Instruction Memorandum No. MT-83-291, which states that "until a policy and procedures are developed, any exchange proposals or sales are to be avoided in areas where "sodbusting" or the possibility thereof is a controversial issue."

113.

Without more specific information, it is difficult to determine which aspects of the high level management alternative is preferred. It should be noted, however, that the preferred level of management was selected on the basis of preserving the natural setting of the wild horse range. Many of the proposals made in the high level management alternative would detract from this setting and would also not be in keeping with preservation of wilderness characteristics.

114.

Refer to Response #10.

The limitations in both soil capabilities and low annual precipitation make interseeding and vegetative manipulations unfeasible in the horse range.

115.

Refer to Responses #4 and #344.

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116.

Mineral reports were prepared for the review of the three Classification and Multiple Use Act (C&MU) segregations. These reports concluded that, within the PMWHR, there is low development potential for all locatable minerals, other than bentonite. Bentonite has moderate development potential in the Wyoming portion of the horse range. However, there are adequate supplies of bentonite to supply current demand for many years to come outside the wild horse range. The PMWHR is included in the listing of sensitive areas from the standpoint of oil and gas leasing in the final RMP/EIS (see Areas "Sensitive to Oil and Gas Leasing" Overlay in Map Pocket).

117.

This section has been rewritten. (Refer to Responsibilities Common to All Land Use Plan Alternatives [Fire], Chapter 1, FEIS.)

116.

Oil and gas exploration obviously will result in some impact to the resources described. Standard stipulations will provide adequate protection in most cases. Where it is shown that standard stipulations would not be sufficient, that area would be considered "sensitive", and special stipulations for resource protection would be developed and applied prior to issuance of an application for a permit to drill. The words "in most cases" on page 7 of the draft have been eliminated from the final RMP/EIS.

119.

Refer to Response #15.

120.

Refer to Issues Considered in Land Use Plan Alternatives, Chapter 1, FEIS. As stated above in Response #112, BLM will not accommodate "sodbusting" practices.

121.

The parcel of land in question technically lies within the boundary of the PMWHR. However, the Secretarial Order designating the PMWHR states the following:

> "... the boundaries thereof shall conform to natural barriers and feasible fencing routes within the area designated in this order."

Since the parcel lies outside of the boundary fence, wild horses or their management were not affected. Following issuance of patent, the PMWHR designation will be removed from this parcel.

122.

The BLM is not considering coal leasing in the Bull Mountains at this time. The purpose of the coal analysis in the RMP is to determine what areas of coal would be acceptable for further consideration. Should a demand for leasing be identified in the activity planning which follows the completion of the RMP/EIS, a complete analysis would be conducted as required by 43 CFR 3420.3.

A new appendix item depicting the results of the application of the unsuitability criteria has been prepared (see Appendices section, final RMP/EIS).

123.

Refer to Responses #160 and #168.

124.

Refer to Response #169.

125.

Appendix 4.1, page A-60, part 4(B) in the draft RMP/EIS included an explanation that BLM will evaluate each newly constructed reservoir for potential installation of waterfowl nesting islands. In addition, BLM has identified in the proposed action section of the final RMP/EIS, 50 additional waterfowl nesting islands to be constructed in existing reservoirs.

The BLM's proposed action also identifies seven reservoir fencing projects for the benefit of waterfowl and other upland nesting bird production purposes. We concur with the research findings of the MDFWP as it relates to nesting cover for waterfowl. The objective of these projects is to provide protection for as much upland cover as is feasible. When planning the project, providing for the use of the water source by livestock must also be taken into consideration. Occasionally, this places some restrictions on the project as it relates to design and size. However, BLM's objective is to enclose, wherever feasible, 50 acre tracts around water sources. A change has been made in the final RMP/EIS to reflect this acreage change. This does not necessarily provide an optimum situation for wildlife, but BLM feels it does provide needed protection for nesting waterfowl and upland birds under a multiple use management concept.

The BLM also has a policy of coordinating the design and location of these projects with MDFWP biologists.

126.

The BLM concurs that the acreage affected by limiting ORV use to existing designated roads would be somewhat less than the 57,900 acres we have identified in the DEIS.

The BLM anticipates some incidental disturbance to occur along existing or designated roads due to vehicle travel and human intrusion on foot into the area. The BLM also recognizes that total enforcement of a closure is impossible and some travel off the designated roads will continue to occur.

However, for purposes of analysis, BLM could not establish an accurate method to estimate the actual distance from an established road that would be significantly disturbed by vehicle travel. Therefore, the acreages of affected habitat were estimated from actual existing road corridors.

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The real issue we are trying to mitigate in this instance is not the travel which is occurring along the existing designated roads. It is the indiscriminate, cross-country travel which is occurring that tramples and destroys upland brush and grass. This is the type of use we are trying to reduce through the limited ORV designations.

Reducing the cross-country disturbance of upland vegetative types will benefit upland game bird habitat by giving some protection to their crucial nesting and wintering areas, as well as reducing the level of human induced harassment which is now occurring.

127.

Refer to Response #160.

128.

Refer to Response #164.

129.

BLM did not mean to imply in our discussion of impacts that the proposal was to destroy 18% of the antelope winter range or 25% of the sage grouse dancing grounds through sagebrush burning. The discussion was intended to identify and quantify the absolute maximum adverse impacts to the various wildlife resources if no consideration was given to protecting crucial wildlife habitats. Very generic impact discussions were used because we have not yet completed our onsite analysis of the allotments we feel might have the potential for some beneficial burns.

Please refer to Wildlife Assumptions, Chapter 4, and Methodology for Controlled Burns, Appendices section of the FEIS, which identifies the assumptions used, and provides an explanation of the procedure and criteria which will be followed to delineate and conduct a burn.

130.

Refer to Response #129.

131.

Refer to Wildlife Assumptions, Chapter 4, and Methodology for Controlled Burns, Appendices section of the final RMP/EIS.

132.

A wilderness management plan for the Pryor Mountain area will not be prepared until Congress designates the area as components of the NWPS. The BLM is also concerned that needed flexibility be retained to ensure that wild horse and wilderness management philosophies are in concert and actually do complement one another. Future management plans will be developed with these objectives in mind.

Please refer to the Proposed Action for Wild Horse Interpretation (Chapter 2) of the final RMP/EIS for a discussion on recreation/tourism activities as they relate to wild horse interpretation.

133.

The final Billings RMP analyzes 13 major issues that were developed from responses obtained from public mailings and meetings. Corridor planning was found not to be a major issue of concern within the Billings Resource Area. A combined state and Federal effort, however, is presently studying possible corridors in Montana. The final RMP identifies Exclusion and Avoidance Areas in order to protect areas with special resource values (see page 3, paragraph 6-9 of the draft RMP).

134.

The recreation management program, as briefly described on page 5 of the draft RMP/EIS, is a very low level program in the Billings Resource Area. A large portion of the public lands in the resource area consists of isolated scattered tracts (see Map 1—Map Pocket), surrounded by privately-owned lands and do not have legal access. As such, except where local or national issues exist such as wilderness, ORV use, land acquisition, or public access, very little use information or site-specific data exists. Alternative methods of resolving the major issues were developed to the extent possible and subjected to impact analysis. The problem with non-issue elements in the recreation program is that there is really very little opportunity to enhance recreation where land pattern and non-Federal ownership are controlling factors. The BLM did not attempt to develop and analyze expansion of a program that does not appear to be a major issue in the area.

135.

The groundwater studies were not complete; only preliminary indications were available. This preliminary information was incorporated into the RMP.

There are very few sources of non-point pollution originating on public lands. The "208 program" is an ongoing study. The available data were examined, but they had little affect on the alternatives.

136.

The visual resource management program consists of subjecting site-specific proposals such as pipelines, fences, roads, etc., to a screening or clearance process to avoid adverse visual impacts during environmental assessment of a proposed action. There are no real alternative possibilities on a plan-wide basis in establishing alternative visual resource classes. For further description of this program, refer to Appendix 4.6, Methodology Used to Determine Impacts to Visual Resources in the DEIS.

137.

Data concerning visitor use days, projected future demand and economic impacts of tourism and recreation is either very spotty or nonexistent for most of the public lands in the resource area. This is dictated in part by the scattered land pattern within the resource area. It was felt that as there were no issues relating to the overall recreation program, that meaningful use of what data is available would not be possible.

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138.

Management decisions are based upon assessing the environmental impacts of a specific alternative using the inventory and resource data available to support that assessment. Decisions are made on the basis of the best information available at the time. When funds become available, new inventories are completed and existing data is updated. The addition of data to inventory files is an ongoing continual process and is a key segment of the resource area's monitoring program.

Important data gaps have been identified in the final RMP/EIS. See the Appendices section of the FEIS and the Proposed Action for Land Tenure Adjustment in Chapter 2 for a discussion of the EA/LR needed for land tenure adjustment.

139.

Refer to Response #220.

140.

The BLM considered several areas or sites within the resource area that had potential as Areas of Critical Environmental Concern (ACEC) as part of the RMP formulations. In some cases, especially where cultural sites were concerned, identification as an ACEC could result in potential resource degradation if the site was given this designation and revealed to the general public. A number of such sensitive areas are included within the wilderness proposals for the Pryor Mountains. Wilderness designation could provide much more stringent resource protection than does ACEC designation.

In addition, the BLM has mapped and provided a list of "sensitive areas" where protective lease stipulations may be needed to ensure protection of certain resource values. See the Appendices section and the sensitive areas overlay in the Map Pocket of the final RMP/EIS.

As with most BLM programs, ACEC considerations are part of ongoing programs and will be proposed for designation where existing management will not provide adequate protection.

141.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

142.

As stated, disposal of any public land parcels cannot be made until a site-specific evaluation has been completed which shows a definite public benefit arising from such disposal. This evaluation will be made as interest is expressed in individual tracts for sale or exchange. The predominant method of disposal will be through exchange as stated in the Proposed Action for Land Tenure Adjustment, Chapter 2, FEIS.

143.

Refer to Response #15.

144.

As directed in the President's Council on Environmental Quality (CEQ) regulations, Section 1502.15, Affected Environment, it is the existing situation that is to be used as the basis for comparison for measuring the effects of the alternatives. For all issues identified in the RMP, the No Action Alternative—the Bureau's management program at the time the proposed action is being written—is, for the purposes of maintaining consistency in documentation and to demonstrate cause and effect, the existing management situation that is used as the point of departure for describing the individual actions of the various alternatives, including the No Grazing Alternative.

As discussed in the Introduction section of the Alternatives Chapter of the draft RMP/EIS, the No Grazing Alternative was considered and analyzed during the scoping phase of developing this resource management plan. Based on this analysis and the rationale discussed in the draft RMP (page 11), the No Grazing Alternative was dropped from further discussion in the draft document as provided in Section 1502.14(a) of the regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA), as promulgated by the CEQ.

The detailed analysis of the No Grazing Alternative, in compliance with Section 1502.21 of the regulations cited, is available at the Billings Resource Area Office, 810 East Main, Billings, Montana, for inspection by interested persons. In response to the National Resource Defense Council (NRDC) comment, however, the following impact analysis summary and conclusions for the No Grazing Alternative are incorporated herein.

1. Range Improvements

   In order to exclude livestock from public lands in the Billings Resource Area, it would be necessary to construct approximately 2,456 additional miles of fence at a total cost of $4,912,000. The fragmented land pattern of the public lands in this area makes the cost of this "alternative" very prohibitive. Maintenance costs would assumably be borne by the BLM at an annual cost of $340,000. This cost is based on a $100 per mile normal maintenance. This cost would undoubtedly be inflated due to vandalism. Additionally, supervision by BLM personnel would prove to be extremely costly.

2. Wildlife

   Previous analysis has shown that exclusion of livestock is not a cure-all. In the *Prairie Potholes EIS*, for example, it was found that "The lack of livestock grazing would not necessarily improve the quantity of all wildlife forage and cover. Additional forage and cover would more than satisfy the needs of increased populations of upland game birds, waterfowl, nongame wildlife and fisheries. Big game forage, however, could be reduced as plant communities changed from shrubs to grass." The long-term result is uncertain as the area has always been grazed by large ungulates (buffalo before livestock)

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and the response of wildlife species in the absence of large ungulates has not been observed over such a large area.

3. Vegetation and Range Condition

Exclusion of livestock grazing would improve range condition rapidly on clayey and sandy range sites which are not dominated by dense sagebrush or blue grama. A slow response would occur on the sagebrush dominated sites, blue grama areas and on soils with limiting factors such as high lime content, low permeability, stoniness and salinity. The change in ecological condition is expected to be similar to the high level alternative. Without the stimulation of grazing, plant vigor and production would level off and stagnate on most soils in the long term (Tuellar and Tower, 1979; Houston and Woodward, 1966). Observations of exclosures throughout this part of Montana indicate that litter build-up greatly reduces desirable plant vigor within 10 years and often allows weeds to invade the exclosure. At the end of 25 years, range condition would be declining on many of the better sites and stagnating elsewhere.

4. Recreation

Recreation access would be severely impacted by the 2,456 miles of fence in addition to the predictable closure of private lands by ranchers in reaction to the exclusion of livestock from public lands.

5. Livestock Production

The loss of grazing would reduce animal productivity on private and state lands, too, as livestock would have to trail to make use of the scattered private and state holdings. This would cause livestock stress and reduce calf weaning weights and other productivity factors. Stress would also be increased because of fences exclosing public lands. Livestock would be excluded from water, forage and shade areas on public lands and would trail along fence lines.

The elimination of livestock on all public lands in the RMP area would cause a loss in livestock production of 4,097,428 pounds of beef.

Calculations were based on pounds of live weight produced by yearlings grazing for six months. Estimated average daily gain of yearlings grazing spring-fall is 1.75 pounds. The daily gain may be much higher (2-3 pounds/day) in the spring. A yearling factor of .75 was used to adjust AUMs.

Calculations are as follows:

62,437 AUMs x 1.25 = 78,046 yearling AUMs
78,046 x 52.5 (monthly gain 30 x 1.75) = 4,097,428 pounds

6. Economics

In this alternative all grazing on public lands would be eliminated in the short and long term. The number of ranch operations affected by this action would be 333. Table 1 shows the impacts to operators by representative size categories. Without Federal grazing, each of the representative livestock categories would have a decrease in ranch income ranging from $2,035 for small operations (71% decrease) to $12,939 for very large operations (20% decrease). The total decrease in net annual income to all affected ranch operations would be $2,304,027, a decrease of 28%.

Elimination of Federal grazing would reduce permit values for the 333 different affected ranches by the full amount of their current value of $6,243,700. These decreases in permit value would have a detrimental effect on ranchers' borrowing capacity and the sale value of affected ranches. For ranches that are heavily dependent on BLM AUMs, the overall reduction in ranch value could be considerably more than the $100 per AUM because elimination of Federal grazing may virtually destroy the ranch as an economic unit.

Since a major source of income for most of the operators is ranching, any reduction in ranch income would cause an equivalent reduction in their personal income. Even with substantial reductions in income, most small commercial operators would probably continue ranching, at least in the short term. There are various actions that small operators might take to enable them to continue operating. These actions include not allowing for depreciation, deferring maintenance or using equity capital to meet short-term operating and family living expenses. Those individuals not now employed off the ranch might seek outside part-time or full-time employment.

7. Social

The social well-being of the families dependent on the 333 ranches in the study area would decrease in the short and long terms under this alternative. The magnitude of the impacts would vary based on the operator dependency on BLM grazing and the ability of the operation to adapt to the forage loss. It is expected that some operations would be severely impacted while others would feel little effect.

Impacts from loss of access to public grazing lands would be most adverse to small operators and to people just starting out in the ranching business, as many of them are barely managing to keep pace with inflation and rising interest costs as it is. For many of them, reduction in personal income and an accompanying drop in their overall sense of security could be expected to result. With 1 or 2 years of bad weather, negative impacts from loss of public forage would, of course, be magnified.

Although BLM regulations do not recognize the right to treat grazing permits as real property,

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TABLE 1

Estimated short and long term impacts of the No Grazing Alternative on Net Annual Ranch Income on Affected Ranches

Ranch Size Category	Size by # of Brood Cows	Number of Ranches*	Average Dec. BLM AUMs/Ranch	Average Annual Net Income per Ranch	Change in Income $	Change in Income %
Small	1-100	86	62	$2,846	-2,035	-71
Medium	101-250	109	160	10,662	-6,235	-58
Large	251-499	52	227	24,501	-7,963	-33
Very Large	500 and up	86	323	65,341	-12,939	-20

*These figures are extrapolations from the 43 "I" and "M" category ranches to the 333 ranches with BLM grazing permits in the entire study area.

Source: BLM, 1983

bankers and realtors consider the permits to have value. One impact to ranchers, therefore, from loss of public AUMs would be the devaluation of the ranch property. That loss could result in added frustration for area operators in obtaining loans in the future. Consequently, opportunities for economic gain and thus opportunities for enhancement of social well-being would be foregone.

Income reduction could also force operators and their families to seek off-ranch employment. For those ranchers who are advancing in age or who live 20-30 miles from the nearest town, however, the prospects of competing in a larger job market would be dim.

If a rancher could not afford to purchase hay or to reduce herd sizes and still maintain a viable operation, he might eventually have to quit the livestock business. Besides losing the business, he and his family would also suffer many intangible losses, such as loss of the opportunity to live a preferred lifestyle, loss of ancestral ties to the lands and possibly the breakup of extended families and close circles of friends.

For those ranchers with very limited dependence on Federal lands, the loss of access to public land would likely create more of an inconvenience than it would a financial hardship. However, because of the dispersed pattern in which parcels of public land occur throughout their private holdings, these ranchers may have to deal with the frustration of seeing their own holdings cut in half or broken up by fences, meaning some alteration of traditional management patterns would have to be made.

8. Regional Economics

Table 2 shows the impact on the resource area's output, earnings and employment with a reduction in livestock sales associated with the No Grazing Alternative. In the short and long term there would be an annual reduction in the value of livestock sales of about $2,728,000. The decrease in total annual gross business volume would be approximately $9,405,000. Total employment in the resource area would decrease by approximately 266 people and total earnings would decrease by $2,853,000 annually (less than 1% of the resource area total in 1979). This would be insignificant to the total economy of the resource area.

TABLE 2

Estimated Impact of the No Grazing Alternative on Output, Employment and Earnings

Short and Long Term Changes	Decrease
Livestock Sales ($1,000)[1]	$2,728
Gross Business Volume ($1,000)[2]	9,045
Earnings ($1,000)[2]	2,853
Employment[2]	266

[1]Based on an annual beef production of 4,097,428 lbs. and a price of $66.59/cut (1979 dollars).

[2]BLM, Montana Economic and Demographic Model.

9. Social Attitudes

No specific information on attitudes toward this alternative has been collected. However, reactions of ranchers and those who identify with them would be expected to be extremely negative. Even though some ranches would experience little or no impact personally, they would likely sympathize with ranchers who they suspected would suffer more adverse impacts. It could be expected that wholesale resentment toward BLM policies would grow and likely persist into the foreseeable future. This alternative would strengthen resolve that planning for public lands should be done at the local level.

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Although vegetation for wildlife and watershed would increase, recreationists and environmentalists might not support the 2,456 miles of fence that would have to be constructed to exclude livestock. In addition, this alternative might lead to increased conflicts between hunters and ranchers as ranchers might react by closing their private land to hunting.

145.

Current policy directs the BLM to identify those areas where there are resource problems or conflicts and concentrate the available money and manpower to resolve those situations. The 1981 inventory evaluated all the major blocks of public land as well as those more isolated areas that had known problems. Due to limited funding for inventories and the scattered and isolated nature of much of the public land in the Billings Resource Area, our efforts were limited to those areas where our actions would be feasible and cost effective. Through the categorization process, areas with substantial problems or conflicts were placed in the "I" or improve category.

Our inventory was geared to evaluating the basic soil and vegetative resources to a level that would allow us to assess current conditions as well as make meaningful projections in respect to response time resulting from various actions.

The BLM did consider a substantial (20%) reduction in the low level alternative for analysis purposes. This was only applied to the "I" category allotments since this was where the problems were identified. Therefore, the proposed allocation of total AUMs does not vary greatly between alternatives, but does analyze significantly different levels of use for the areas.

The long-term spread was from 62,437 to 73,148 AUMs, which is an 18% difference. Also, the Billings Resource Area is carrying 7,785 AUMs in suspended nonuse. In other words, at the time of adjudication, the Bureau imposed a reduction of 7,785 AUMs from the actual livestock use at that time.

146.

Soil and vegetation inventories were conducted as explained in Response #145. This information is available at the Billings Resource Area Office and is mapped in detail on orthophoto quad maps as well as tabulated in various computer printouts. Space was very limited in the RMP document as compared to grazing EISs. Much of the basic data has already been collected, at least enough to determine current conditions in the areas inventoried. Also, "prospects" and "alternatives" were considered in the categorization process. Detailed, allotment-specific recommendations will be made at the activity planning stage through coordination with the operator, other state and Federal agencies, and the interdisciplinary input of the resource area staff.

Trend information has been collected on all allotments under implemented AMPs which encompass 154,639 acres (Tables 2.4 and 3.7 of the DEIS). At the time the inventory was being conducted, a trend assessment was made at each write-up site. This assessment was based on observed erosion condition, plant vigor and reproduction, species composition, and evidence of past as well as current grazing use. The range conservationist's judgement of trend was a major factor in the allotment categorization process. For example, the State Line allotment (number 4003) is a large allotment (21,738 BLM acres) with only 52% of the range in good and excellent condition. However, it was placed in the "M" category because trend appeared upward under current management. As previously stated, the categorization process focused attention on the "I" allotments. Criteria for placing pastures in this category included the presence of a downward trend, unsatisfactory condition with a static trend, and the land pattern must be such that BLM's actions could have a significant influence on management.

Table 3.7 in Chapter 3 of the final RMP/EIS displays actual use summaries for implemented AMPs.

147.

The site-specific range improvement actions for each "I" allotment will not be decided until AMPs are developed. One component of AMP development involves an analysis of the cost efficiency of the money spent on range improvements within the allotment. This is accomplished by entering a project or projects into a computer to determine a cost-benefit ratio. The kinds and numbers of projects are dependent in part on this analysis. The process of developing an AMP involves interdisciplinary teamwork with range, wildlife and watershed specialists as well as the livestock operator. Final management proposals may be somewhat different than the estimated range improvements shown in Table 2.5 of the DEIS. However, the management direction has been set by the objectives and constraints identified in Table 2.2 of the DEIS and efforts will be focused in the "I" allotments.

The range improvement estimates were made by calculating an appropriate pasture division in each allotment in order to implement an improved grazing management system, normally a deferred or rest rotation system. In some allotments there were already adequate fences, so additional fences were not proposed. Water developments and land treatments were also general estimates. These allotment-specific estimates are available at the Resource Area Office. They were not included in the RMP/EIS because they are preliminary estimates and do not represent a commitment to a rancher or other interest to invest a specific amount and kind of range improvements in the allotment. The response to grazing management was estimated through the knowledge of soil capabilities (Tables 4.1 and 4.2 of the DEIS) as observed on these soils in rest rotation and deferred rotation systems.

148.

The commentor is confusing surface owner consultation with surface owner consent. Consultation is part of the planning process whereby BLM sought the opinions of surface owners as it pertains to surface coal leasing, not their consent to have the underlying coal leased.

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The term "significant number" may vary from field to field. The high/moderate, surface owner consultation, and unsuitability criteria and multiple use screens were applied before development of alternatives, since Federal coal regulations require that these screens be applied. If additional multiple use concerns are identified, additional acreage may be deleted.

Criteria #1-6, #8, and #16-20 were applied. Only criterion #7 and #9-15 were not fully applied. Only criteria #2, #3, #16 and #19 resulted in definite unsuitable areas. The results are shown on Figure 2.8 of the DEIS. The remaining criteria were applied, but do not affect the availability of coal.

Criterion #19 was applied only preliminarily. Possible alluvial valley floors (AVF) were identified. The Office of Surface Mining (OSM) and Montana Department of State Lands must make the final determination on the location and extent of AVFs prior to mine plan approval.

149.

Specific, quantitative impacts were not presented in the DEIS because site-specific wildlife data has not yet been collected. Please refer to the Appendices section (application of coal unsuitability criteria) for a summary of data which is available, and that which will be collected in order to fully apply unsuitability criteria #9-15. These inventories are scheduled to begin in FY-84.

Criterion #15 specifically identifies critical deer and elk winter ranges as areas to be recommended as unsuitable for mining. Proper application of this criterion should insure a balance is maintained between winter and spring/summer big game ranges.

(Also refer to Response #247.)

150.

The RMP is not a decision making document in regard to coal leasing. It provides a screening process for coal to define areas that are suitable and not suitable for further consideration for leasing. For the areas that pass through the screens, activity planning (site-specific analysis and a regional EIS) must be completed before leasing can occur. Because no specific proposals are being evaluated here, detailed analysis of individual ranch related economic impacts are not provided. Agricultural economic impacts will be assessed at the activity planning stage. Additional general coal related agriculture impacts have been added to Chapter 4 of the final RMP/EIS.

For a more specific discussion of the coal process, refer to Issues Analyzed in Land Use Plan Alternatives (Coal), Chapter 1, FEIS.

151.

In either an exchange or sale proposal, the public interest is determined by evaluations in conjunction with the EA/LR. The one criterion that justifies a land exchange is that the values received are greater than that given up. The values could be any one or a number of things including improved access, more efficient management, wildlife habitat, increased recreational opportunities, etc. Blocking up Federal land by exchange is warranted where the public accrues some benefit from that exchange. Blocking up just for the sake of blocking up is not warranted.

152.

Site-specific in-depth analysis of environmental impacts to all resources cannot be included in this document due to unavailable site-specific land use proposals. Programs such as oil and gas development are ongoing and evaluated on a case-by-case basis as specific drill plans are proposed and submitted to BLM for approval. This includes an in-depth multidisciplinary environmental assessment of anticipated impacts associated with the drilling activity itself as well as any other development work needed such as access roads, etc. Stipulations are then developed and attached to the permit for mitigation, to the extent possible, of any adverse impacts. This same process is utilized by BLM for all proposed actions which involve potential land disturbing activities.

It is BLM's intent to map available site-specific proposals carried forward in the proposed action when the Record of Decision is published.

The BLM's role in wildlife management is that of habitat protection or enhancement. Therefore, impacts are quantified utilizing acreage figures.

The MDFWP has the responsibility of wildlife species population control and assessment. The MDFWP is consulted and requested to offer an opinion on any proposed action in which BLM determines through the environmental assessment process that a significant impact, either favorable or adverse, could result to a specific population of animals. This consultation and evaluation of affect to population numbers is carried out on a case-by-case basis as specific land use proposals are made.

The effects of erosion and sediment yields vary greatly among the various soil structures. These impacts must also be specifically identified and quantified on a case-by-case basis in the environmental assessment process as site-specific proposals are made. Acre feet of runoff was presented utilizing currently available average precipitation levels.

153.

With the scattered nature of Federal lands in the resource area, most access road development would be occurring upon private lands. Furthermore, access roads for exploratory wells are narrow, with minimum necessary construction. Less than 1 acre per mile of access is generally affected.

The list of available stipulations may be found in Appendix 1.5 of the DEIS. The Lewistown District Programmatic EA offers a much more complete analysis of oil and gas exploration and development activities and mitigating measures.

154.

Refer to Response #15.

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155.

Section 203(a)(1) of FLPMA specifically allows for disposal of public land if "such tract because of its location or other characteristics is difficult and uneconomic to manage. . . " However, prior to disposal, a site-specific EA/LR would evaluate all applicable values, of which difficulty of management is only one.

156.

The BLM does not have a policy of encouraging subdivision of agricultural lands. If subdivision of agricultural land was a possibility in a proposed land sale or exchange, the possible effects would be fully analyzed prior to any recommendation.

157.

Also, in a July 7, 1983 letter to Secretary of the Interior, James Watt, Edwin Harper, Chairman of the Federal Property Review Board, affirmed the Department of Interior's traditional independence in carrying out a land disposal and adjustment program. In essence, this letter exempts BLM from the Asset Management Program. However, BLM will continue a lands adjustment program on an opportunity basis in keeping with a common sense management approach within the existing management alternative.

For a narrative of the process involved in land adjustment, see the Proposed Action for Land Tenure Adjustment, Chapter 2, FEIS. This process adequately provides for public input on any and all aspects of proposed land actions.

158.

See the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

159.

The RMP process is directed towards identifying and analyzing issue-driven land uses which are authorized on the public lands. The major issues carried forward to be analyzed in the DEIS were determined through public responses during the scoping process and by BLM specialists.

In-depth analysis of the production and extraction of saleable commodities was included in the DEIS due to the potential significant impacts these activities could have socially, economically and to other resource values.

In regard to the analysis presented for other resource values and amenities such as fish and wildlife habitats, our intent was to present the habitat requirements of the major species of interest, and quantify the crucial or key habitats which could potentially be affected should a proposed development occur. This information can be found on pages 75 through 78 in the DEIS and is also available in greater detail on map overlays available in the Billings Resource Area Office. Detailed site-specific analysis of impacts could not be addressed under each proposal and alternative level since definite boundaries or locations of many of the proposed actions were not available.

A complete assessment of anticipated impacts to all resource values will be completed as site-specific proposals are made, prior to any development work. If important wildlife values are in conflict with other program proposals, trade-offs will usually be made to the benefit of wildlife.

BLM monitors actual public use at a few selected sites such as the Pryor Mountain Wild Horse Range, Asparagus Point and the environmental education sites near Billings. Our only other indicators of public use are personal observation and hunter use statistics provided by MDFWP. These statistics are on file at the Billings Resource Area Office and available for public inspection.

Recreational access needs as identified through the scoping process and through meetings with user groups and the Montana Department of Fish, Wildlife and Parks as the RMP was being developed are identified on page 37 of the DEIS. Additional sites will be considered for access as the interest or need arises.

160.

BLM does not intend to imply that "good" grazing management automatically leads to good wildlife habitat management and production. We believe that management practices can be beneficial to livestock and certain wildlife species if the objectives of both programs are fully coordinated. Our interpretation and objective in good grazing management is the establishment of grazing systems and assignment of livestock numbers which are compatible with the forage available, and which does not maximize its utilization at the expense of other resources such as wildlife habitat. Our wildlife objectives, in turn, are to maintain and enhance good habitat conditions for key species of wildlife. In order to merge these objectives, which are not synonymous and which will sometimes conflict, we have initiated a coordinated management plan approach to the development of allotment management plans. This approach requires that specific objectives for both grazing management and wildlife are developed on an individual allotment basis, and trade-offs analyzed and agreed to prior to allotment management plan implementation.

The primary goal of grazing management is to strive for and maintain ecological range condition in at least good condition through the use of grazing systems and such improvements as fencing, addition of water sources and vegetative manipulations.

Wildlife management objectives are much more diversified and complex. An assessment of the habitats which are present, including wetland, riparian and woody floodplain types, must be made, and an evaluation as to their condition completed. Crucial habitats such as wintering areas, upland bird mating and nesting sites, elk calving areas, migration routes, threatened and endangered (T&E) species habitat and special habitat features such as cliffs and dead snags must be delineated. Potential project developments must be identified which take into consideration the needs of both game and nongame species. Site-specific objectives to maintain or enhance the habitat for the key species within the area are then developed. This process is completed in consultation with MDFWP.

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The wildlife objectives and proposed developments are then compared to the proposed objectives and developments of the grazing management program. In cases where significant conflicts appear, alternatives are developed to minimize the problems. It then becomes a management decision as to which alternative is selected and what trade-offs, if any, can and will occur. Appendix 4.1, page A-60 of the draft RMP/EIS lists some standard stipulations and criteria to protect or enhance wildlife habitats which must be applied.

In addition to the coordinated approach to new grazing management plans, the Billings Resource Area is currently working on a complete analysis of existing allotment management plans, utilizing the same approach. For those plans already having wildlife objectives incorporated, we are verifying their adequacy and/or success. For those allotments not having specific objectives, this office is developing objectives, utilizing the criteria and processes initiated for new grazing management plans.

As a follow-up measure, on both the existing and new grazing management plans, a joint range/wildlife monitoring plan is being developed and initiated on each allotment which will closely follow all planned objectives and document the progress, both favorable and unfavorable.

In addition to the wildlife management input into AMPs, as part of the preferred alternative, this office will also develop a habitat management plan (HMP) for chukar partridge. Habitat management plans are developed in order to provide specific management direction over large expanses of public land to achieve long-term habitat management objectives for an individual or related group of wildlife species.

We are also considering development of HMPs for such species as mule deer, antelope, bighorn sheep, sage grouse, sharptail grouse, waterfowl, fisheries and prairie dogs. Completion of these plans will be dependent upon available funding and manpower capability.

161.

Due to the very scattered nature of the public land pattern found within the Billings Resource Area and given the limited BLM budget and manpower capability for wildlife, a site-specific wildlife improvement plan for each tract of public land simply is not feasible.

Please refer to Response #160 and Objectives Section in Chapter 2 of the FEIS, for a discussion of wildlife objectives and goals and on explanation of ongoing efforts to fully integrate these objectives and goals into existing and proposed allotment management plans. In the long term, this will place approximately 195,822 acres or 46% of the surface acreage administered by BLM within the resource area under a management plan which recognizes wildlife needs and provides for monitoring of habitat conditions.

In addition to this effort, similar wildlife objectives and goals will be incorporated into the management plan for the PMWHR which encompasses 44,296 acres or an additional 10% of the resource area. This plan will be developed in FY 1984.

We recognize these plans will not cover every tract of land. However, before any land disturbing activity resulting from commodity production or extraction can occur, a site-specific environmental assessment must be completed. This requires input from all disciplines, including a wildlife biologist.

162.

The Billings Resource Area Office inventoried 36,795 acres of public land within the Land Tenure Adjustment Area and made preliminary recommendations for retention, disposal and further study category tracts. (Page 33, paragraphs 3-13 of the draft RMP/EIS, and Appendix 1.6, pages A-10—A-16.) These were preliminary identifications based upon the criteria listed in Appendix 1.3, page A-4 of the DEIS. It was the intent of this office to receive public comment on the draft criteria and the lands tentatively classified in the three categories.

The current constraints on the length of planning documents renders it impossible to include a tract by tract analysis within the document itself. Therefore, the RMP is meant to provide general guidance to specific programs. Site-specific activity planning addressing proposed land sales or exchanges is handled within the EA/LR. In other words, a multidisciplinary review, including intensive wildlife and cultural resource inventories will be conducted prior to any public lands being formally offered for sale or exchange. This step was not properly explained in the draft RMP/EIS. See the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

Specialists representing all resource interests discussed in this planning document were assigned to the interdisciplinary team. These individuals were well qualified to address the issue areas and assess the environmental consequences of the four alternative levels. Reviews of the draft materials were also conducted by competent specialists representing all resource interests at the BLM District and State Office levels.

163.

Refer to Response #160.

164.

We have identified some allotments in the southern portion of the resource area for consideration and evaluation as potential sites for sagebrush manipulation by burning. Please refer to Table 2.2, pages 12 and 13 of the DEIS for a listing of the allotments under consideration. However, no lands have been identified for possible controlled burns which lie within the State of Wyoming. BLM did not intend to imply that these burns, if conducted, would be of benefit to sharp-tailed grouse. The key species are chukar partridge, sage grouse and antelope.

The potential increases in sharp-tailed grouse habitat mentioned in Chapter 2, Summary of Environmental Consequences by Alternative, refers to burning which is being considered on allotments north of the Yellowstone River. Several of these allotments currently support active populations of sharp-tailed grouse. These allotments are again identified on pages 12 and 13 of the DEIS. Specific geographic locations can be made from

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the allotment map overlay provided in the back map pocket in the DEIS. Burns will not be conducted on any portions of these allotments which would adversely affect sharp-tailed grouse.

165.

We concur that much of the public land within the resource area supports excellent wildlife populations and habitat. In fact, much of the area contains tracts which provide either all or a portion of crucial habitats for many species.

Excellent wildlife habitat and species population concentration areas did not surface as an issue in the scoping or public response phases of the RMP process, and therefore were treated in a generic manner in the document. This is not to say these concerns do not receive special management emphasis. In fact, these areas receive the highest priority for consideration in the land use planning process, and in the evaluation and mitigation of any proposed development activities.

The areas we refer to as crucial habitat or habitats requiring special management attention are mapped and available for public review in the resource area headquarters. All mapping is updated regularly utilizing data collected by BLM and MDFWP.

166.

Our records and inventory data verify that the SE¼ of T. 9 S., R. 24 E. is high value sage grouse habitat. The BLM is not proposing that any of this quarter section be considered for sagebrush burning.

We also recognize that areas of the public lands within T. 9 S., R. 21 E. contain high value habitat for sage grouse and pronghorn antelope. A portion of this township is being considered for possible sagebrush manipulation through burning. Please refer to Response #131 for a detailed explanation of the procedure that will be used to evaluate the area and the criteria which must be met before burning will occur. We feel confident, based on the criteria we have established and the level of analysis and coordination with MDFWP which will be required, that adverse impacts to wildlife and wildlife habitat will be adequately assessed and mitigated if burning is to occur. No action will be undertaken which would adversely affect the hunter use of the area.

167.

The BLM believes that a key element in the management of nongame wildlife species is to provide as diverse an array of habitat types as possible. This includes not only diversity in plant species, but also structure and ecological condition of the various communities, as well as special habitat features such as cliffs, caves and dead tree snags. Realizing we are dealing with an estimated 170+ species of birds, 95+ species of mammals, 25+ species of reptiles and 35+ species of fish, which we know occur within the Billings Resource Area, a site-specific management plan for all species clearly approaches the impossible. Additionally, it is not the intent of the resource management plan process to be that site-specific. Therefore, maintenance of these diverse habitats has become the primary objective of our nongame program. As stated on page 78, column 1, paragraph 2 of the DEIS, we recognize certain species as requiring special management consideration due to their uniqueness or special habitat requirements. These species and their habitats are carefully evaluated in every land use environmental assessment to ensure they are not significantly impacted.

Even though this office receives very little funding for nongame habitat enhancement, we do require ramps be installed in all new stockwatering tanks, provide nesting boxes for bluebirds and wood ducks, construct raptor nesting platforms, fence small areas such as pasture corners and seeps, protect old dead snags and restrict public use cf caves used as bat hibernaculums as routine nongame species habitat management practices.

The resource area office presents two to three talk/slide show programs to the public schools and service organizations annually for public education and interpretation purposes. The BLM also provides an onsite wildlife habitat interpretation and display for cub scout troops at the Ah-Nei Environmental Education Site near Shepherd. Our biologist spends one week annually with girl scout volunteers doing habitat data collection, interpretation and project maintenance, provides wildlife and habitat displays for visitors to the Billings Resource Area Office and makes available a number of preserved specimens to anyone wishing to use them for educational or display purposes. The resource area wildlife biologist is available at any time upon request to provide any of the above mentioned services.

The nongame program and public education program were not discussed in detail in the DEIS since they did not surface as issues during the scoping process and public response period.

168.

Please refer to Response #160 for a detailed explanation of the ongoing and future efforts being utilized to fully integrate wildlife objectives and goals into the grazing management program. In addition, page 40 of the DEIS contains a listing of proposed improvements aimed specifically at enhancing wildlife habitats which could not be achieved through a coordinated wildlife/grazing management plan either because they are needed outside an existing or proposed AMP or because their implementation would be solely for the benefit of the wildlife resource.

We anticipate adjustments in livestock numbers and systems will be required either temporarily or permanently in order to meet our joint long-term wildlife/grazing management objectives. The allotment categorization process was the tool we used to initially identify problem areas. An explanation of the categories and their meaning can be found on page 11 of the DEIS.

The primary criteria used to identify these problem areas were range condition, economic feasibility to resolve problems, land ownership pattern as it offsets BLM manageability and resource conflicts. Conflicts between wildlife habitat needs and grazing objectives

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were carefully evaluated in the process. The BLM believes that a joint wildlife/range monitoring program will play a key role in the identification of specific problems and adjustment needs. The assignment of an allotment into one of the categories is a dynamic process which allows BLM the flexibility to change an allotment's category at anytime when an anticipated or demonstrated need is identified.

The increase in AUMs shown on page 148 of the DEIS was calculated on the premise that through the improvement in range condition resulting from management actions, increased forage would be produced. These projections were over the long term (25 years) and even then would only "potentially be available to livestock." The increased AUMs were computed using the Soil Conservation Service (SCS) technical grazing guides which specify a livestock stocking rate for each range site in each ecological condition, precipitation zone, and geographic area. These guides were developed by the SCS through input from soil scientists, range conservationists and wildlife biologists (SCS, personal communication). Wildlife did receive consideration on an individual range site basis during the development of these guides; to ensure crucial habitat needs as well as watershed needs were provided for. This involved extensive monitoring and clipping to determine plant community composition and production.

We agree that improvement in range condition is not always synonomous with improved wildlife habitat for any one particular species. However, improvement in ecological condition nearly always represents a more diverse, stable plant community. This contributes to watershed stabilization as well as an improvement in both the quantity and quality of forage produced. We believe improved diversity and vigor in a plant community generally does provide some benefits to the wildlife resource.

The allocation to livestock is based on a proper use factor by plant specie. The 50% allocation to livestock mentioned is the maximum by weight by specie that could be utilized under proper use conditions. This does not mean, as you suggest, that 50% of the total production could be removed annually by livestock. For some plants such as shrubby browse species, the proper use level for livestock may only be 10% and for many forbs, which are often particularly important to wildlife in their early stages, the factor may be as low as 0%.

This process is critical to the wildlife resource since much of their dietary, cover, and crucial wintering habitat needs are comprised of shrubby browse species, forbs and adequate residual grass stands. In the original survey from which the livestock AUMs were adjudicated, wildlife received an allocation based on a proper use factor by wildlife ungulates on individual plant species. If crucial wildlife habitats or riparian type habitat zones are identified within an allotment, the wildlife objectives were, and still are, to strive for maintenance of the areas, and over the long term, enhancement of them.

In the meantime, an intensive monitoring program will be maintained to assess the progress of the joint wildlife/range management objectives. In cases where additional forage production is documented in an allotment, increased livestock use would be authorized at a level compatible with the stated joint objectives on a temporary, nonrenewable basis. This will ensure the wildlife resource is not degraded by continuous use.

169.

The BLM does not mean to imply that increased water availability automatically equates with wildlife habitat expansion. Additional watering sources will be constructed so as to facilitate wildlife use only. The planned watering facilities will be used to expand chukar partridge, sage grouse and antelope habitats in the southernmost portion of the resource area. Their locations have been identified in areas where monitoring has indicated that water availability is the limiting factor. No yearlong water sources are located in a radius ranging from 1.5 miles to 3 miles from the sites selected.

We agree that livestock watering sources can lead to heavier livestock use in areas where they are located. This is why we require that the locations be determined jointly between the range and wildlife specialists to ensure no high value nesting habitat or crucial winter ranges are unduly degraded or disturbed by loss of residual vegetation or trampling of browse species. Another objective is to achieve a better distribution of livestock so areas which are heavily trampled and beaten out will have an opportunity to recover and establish a more desirable vegetative composition and structure for wildlife purposes.

In all instances, BLM requires that new water sources be modified for use by wildlife, either by fencing to protect upland vegetation, or by installation of alternate watering devices. We also contend some benefit is derived for wildlife by installation of any watering source.

170.

Refer to Response #289.

171.

A multidisciplinary team has reviewed the initial inventory data for all tracts of land in which you indicated a concern on behalf of the National Wildlife Federation. As a result, some changes have been made in the proposed recommendation. The recommendations and summary rationale are provided below.

In addition, prior to any disposal of land, either through sale or exchange, a site-specific environmental assessment must be completed which requires input from all resource specialists. The State Director Guidance issued June 16, 1983 (Instruction Memorandum MT-83-269) requires that the MDFWP be consulted on any proposed land transaction and requested to provide an analysis and comments.

The BLM's predominant method for land tenure adjustments is through exchange for lands with equal or greater resource and public values.

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DEIS Recommended Land Status	Final RMP/EIS Recommended Land Status	Rationale
71-D Stillwater County	71-D Stillwater County	Has no legal access, small tract potential
24-D Sweet Grass County 25-D	24-D Sweet Grass County 25-D	Both tracts have excellent exchange potential
20-D Yellowstone County	20-Fa Yellowstone County	Additional data is needed to make a final recommendation
3-F Yellowstone County 4-F	3-Ra Yellowstone County 4-Ra	Provides habitat for upland game birds
69-D Yellowstone County 70-D	69-Fa Yellowstone County 70-Fa	Additional data is needed to make a final recommendation
21-D Yellowstone County	21-D Yellowstone County	Has excellent exchange potential
23-D Yellowstone County	23-Ra Yellowstone County	Public access and habitat for mule and white-tailed deer
8-F Stillwater County 9-F	8-F Stillwater County 9-F	Additional data is needed to make a final recommendation
65-D Yellowstone County	65-Fa Yellowstone County	Additional data is needed to make a final recommendation
42-D Stillwater County	42-D Stillwater County	Has excellent exchange potential
62-D Yellowstone County	62-Fa Yellowstone County	Additional data is needed to make a final recommendation
5-D Yellowstone County 6-D	5-D Yellowstone County 6-D	Contiguous to lands proposed for subdivision
4-D Yellowstone County	4-D Yellowstone County	Has excellent exchange potential
5-F Yellowstone County	5-F Yellowstone County	Additional data is needed to make a final recommendation

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172.

We refer you to 43 CFR 1610.4-9, which states in part, "After publication of the draft resource management plan and draft environmental impact statement the District Manager shall evaluate the comments received and select and recommend to the State Director, for supervisory review and publication, a proposed resource management plan and final environmental impact statement." All comments on the draft RMP/EIS are responded to and published in the final RMP/EIS. The District Manager utilizes these comments, whether by a single individual or groups, and according to their substance and validity, to evaluate and make any necessary changes in the final RMP/EIS. In addition, a 30-day protest period is provided after the date the Environmental Protection Agency publishes the notice of receipt of the final environmental impact statement containing the plan or amendment, in the *Federal Register*. For specific information on protest procedures, refer to 43 CFR 1610.5-2.

173.

The BLM believes that an excess program is necessary in 1983. The habitat management objectives of the three Federal agencies involved in the grazing of wild horses support this action.

Methodology for arriving at the target population is displayed on pages A-29 through A-31 of the draft RMP/EIS.

174.

The target population of 121 horses was determined after a systematic evaluation of the inventory data. The inventory was designed to assess the current condition and potential of the basic soil and vegetative resources. Additionally, the Bureau welcomed any production data offered to help minimize the subjectivity in determining a carrying capacity. Any adjustment from this figure will be supported by monitoring data.

There was above normal precipitation on the horse range in 1982. However, soil and climatic conditions are such that one year's precipitation is not going to produce drastic improvements in either production or vegetative species composition. Establishment of a target population must be based on projections of the normal situation and not short-term conditions brought about by ephemeral precipitation.

175.

Refer to Response #3.

176.

Refer to Response #4.

177.

Refer to Responses #4, #5 and #344.

178.

Refer to Response #9.

179.

Refer to Response #6.

180.

Refer to Response #10.

181.

The final RMP/EIS places stronger emphasis on the scattered land pattern in the Billings Resource Area.

162.

Refer to Response #3.

183.

The Little Belt Mountains are mentioned in the Geology and Topography section, Chapter 3, FEIS.

184.

The statements mentioned on pages 71 and 72 of the DEIS are in reference to the planting of crested wheatgrass which was used to stabilize the soil and not the overall purpose of the Bankhead-Jones Act.

185.

There are very few true riparian zones on BLM lands in the Billings Resource Area. However, there are several miles of intermittent streams and overflow areas that support woody vegetation. Often the streambed has eroded to a depth that the water is contained within the channel and there is very little, if any, overflow. In these areas, the banks usually support shrubby species such as snowberry, rosebrush, chokecherry and occasional buffalo berry. The intent is not to strive for a domination of these shrubby species over large areas, but to prescribe a grazing treatment that would achieve good or excellent condition on the surrounding sites, thus allowing the shrubs to become established and thrive where they are most ecologically suited. These areas normally only occupy a small proportion of a pasture and regardless of stocking rate, are often overused because of cattle concentrations. Therefore, the adjustment will likely be in season of use rather than numbers of livestock, and use will be authorized during fall or winter when the climate is such that livestock do not require as much shade and water.

196.

The Pryor Mountain WSA contains 16,927 acres while the portions of the Burnt Timber Canyon and Big Horn Tack-On WSAs recommended for wilderness are each less than 5,000 acres in size. The portion of the Burnt Timber Canyon unit recommended for wilderness consists of 3,430 acres and the southern portion of the Big Horn Tack-On is 2,550 acres in size. However, in conjunction with adjacent U.S. Forest Service and NPS areas which have been recommended for wilderness, the total area exceeds 40,000 acres. Rationale for recommending that the BLM study areas become components of the NWPS is provided in the Proposed Action for Wilderness, Chapter 2, FEIS.

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187.

The small ranches considered here do have an average 191 AUM permit. (Table 3.23 contained incorrect information in the draft document and has been revised in Table 3.24 in the final RMP/EIS.) This table does not include the average of all BLM permits, but only those in the "I" and some of the "M" allotments where permits tend to be larger. In addition, some ranchers have more than one permit, so their total number of BLM AUMs would be larger than that for a single allotment.

188.

The BLM's role in wildlife habitat management has grown tremendously in the last decade. The programs' most significant boost came with the passage of FLPMA in 1976. This act formally recognized the wildlife program as one of the multiple use concerns to be addressed in all land use planning activities.

This act also authorized the appropriation of BLM monies specifically for the purpose of acquiring high value wildlife habitats, either in cooperation with other Federal and state agencies, or through BLM's land use planning process.

189.

The RMP supercedes the out-of-date 1973 management framework plan (MFP). The RMP does not advocate additional coal leasing in the Bull Mountains. It merely makes additional Federal coal available for further consideration for leasing as required in the Federal Coal Management regulations at 43 CFR 3420.1-4(e). The question of the need for additional coal leasing is addressed by the Regional Coal Team (RCT) and the Interior Department in later activity planning (43 CFR 3420.3). The major change that has occurred since 1973 has been the development and adoption of the Federal Coal Management Program, which followed major legislation (FCLAA, SMCRA and FLPMA).

190.

The final RMP has been changed to add some more discussion of the potential impacts from coal mining in response to this comment. The reader will note, however, that coal mining will not automatically result from this RMP. If there is sufficient interest by industry or the RCT in leasing at a later date, one or more Federal tracts may be analyzed in a regional coal leasing EIS. If those tracts eventually are leased, the operator must satisfy all state and Federal requirements before a mine plan would be approved. This involves an entirely new and separate EIS, prepared on that particular mine. Therefore, it is neither feasible nor appropriate to attempt to analyze in detail potential reclamation problems at the RMP stage. (See Chapter 1, Coal, for a more thorough discussion of the leasing process.)

191.

Refer to the Proposed Action section for Coal, Chapter 2, final EIS.

192.

As stated in 43 CFR 3461, the BLM has the option to carry forward areas to which the unsuitability criteria have not been fully applied until final lease sale EIS. This allows the BLM to further study these areas without precluding them from further consideration. Language has been added to the RMP clarifying which criteria were not completely applied due to inadequate data (see Appendices section). This data will be acquired as funding and manpower limitations permit.

193.

In response to this comment, a more thorough discussion of the multiple use trade-offs analysis has been clarified in the final RMP.

A map has been added to the final RMP showing areas acceptable for further consideration for coal leasing pending further study (see Coal Alternatives, Chapter 2, FEIS).

194.

Refer to Response #189.

195.

The RMP does not recommend or advocate that Federal coal be exchanged, except where it can be shown, on a case-by-case basis, that such an exchange would serve the public interest.

196.

Refer to Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

197.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

198.

Refer to Response #140.

199.

The first sentence refers to the wildlife input which must be included in all environmental assessments when surface disturbing activities are proposed. Wildlife management was not identified as an issue during the scoping process. Therefore, wildlife management activities were not analyzed any further in the DEIS. However, this section of the RMP has been rewritten to clarify BLM's wildlife program responsibilities in more detail. See Responsibilities Common to All Land Use Plan Alternatives, Chapter 1, FEIS, and the Appendices section, FEIS for results of unsuitability criteria application.

200.

Refer to the Proposed Action for Land Tenure Adustment in Chapter 2, FEIS.

201.

The sentence on page 7 of the Draft has been reworded; also see Response #189.

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202.

This paragraph has been rewritten. Refer to Response #193.

203.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

204.

The sentence referred to has been reworded to clarify that coal producers have, from time to time, informed BLM of their desire to lease Federal coal. This type of correspondence is ongoing and should not be confused with the "Call for Expressions of Interest" step in activity planning.

205.

Refer to Response #157.

206.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

In addition, the disposal and retention criteria in the Land Pattern Review and Adjustment Project Management Plan were incorporated into the State Director Guidance for Resource Management Planning in Montana and the Dakotas (April 1983) (see Appendices section, FEIS).

207.

The inventory for wildlife data and application of the unsuitability criteria is mandated by regulation, and must be accomplished prior to lease offering.

Refer to the Proposed Action section for Coal, Chapter 2, and Responsibilities Common to All Land Use Plan Alternatives, Chapter 1 in this document.

208.

This portion has been rewritten to clarify the fact that the entire section is a discussion of projected possible impacts from coal mining. This is done strictly for analysis purposes in comparing the possible outcomes of the various alternatives (refer to Response #190).

209.

In-place coal reserves were used to calculate coal amounts potentially available for mining. Actual recoverable reserves would depend on an individual mine plan. The analysis presented represents the BLM's "best estimate" about the possible impacts that might eventually stem from the decision to make 9,360 acres available for further consideration for surface coal leasing. This was in response to NEPA which required analysis of various alternatives. In response to this comment and others, this section and certain environmental consequences sections have been rewritten to incorporate more realistic time frames for potential development and for increasing their clarity.

210.

Refer to Responses #189 and #195.

211.

Refer to Response #193.

212.

In the case of AVFs, the final determination of unsuitability can be made up until the time of mine plan submission. Therefore, some areas preliminarily identified as AVFs are being carried forward.

See Response #192 for further clarification. As stated in 43 CFR 3461.3-1(2) requires the authorized officer to describe in the land use plans the results of the unsuitability applications along with any exceptions/exemptions. The actual process which was followed to arrive at various decisions is part of the Management Situation Analysis available in the Billings Resource Area Office.

Refer to Response #192.

213.

Because so much is yet unknown about future coal development in the area, the resource area staff attempted to leave management options open to "lease or exchange, pending further study". In the last paragraph on page 25 of the draft, the statement is made that "Coal exchanges would be considered ***when it's in the public interest*** to 'block up' Federal holdings."

Public interest determination is made for each exchange proposed in the activity planning stage in conjunction with the EA/LR.

214.

The High Level Management Alternative has been rewritten to clarify that all mandated workloads, which would include full application of the wildlife unsuitability criteria, would be accomplished prior to any lease offering. Refer to the High Level Management Alternative for Coal, Chapter 2, and Responsibilities Common to All Land Use Plan Alternatives, Chapter 1 in this document.

215.

In response to this comment, this section has been rewritten to clarify the fact that further studies and additional multiple use trade-off analysis are required prior to actual leasing (see High Level Management Alternative, Chapter 2, FEIS). Multiple use constraints have been applied by the EIS team to the extent possible using existing data.

216.

Proposals to exchange coal will be considered on a case-by-case basis. Each such proposal will be evaluated on its own merits.

217.

In the Declaration of Policy, Section 102 of FLPMA, Section 102(a)(12) states that:

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"the public lands be managed in a manner which recognizes the nation's need for domestic sources of minerals . . ."

Moreover, Section 206(a) specifically states that "a tract of public land or interests therein may be disposed of by exchange . . . where the Secretary concerned determines that the public interest will be well served by making that exchange: Provided, That when considering public interest the Secretary concerned shall give full consideration to better Federal land management and the needs of State and local people, including needs for lands for the economy, community expansion, recreation areas, food, fiber, minerals and fish and wildlife . . ."

In addition to the FLPMA policy stated above, the BLM Montana State Director, in his State Director Guidance for Resource Management Planning in Montana and the Dakotas, April 1983, states the following:

"Consolidation of mineral estate—from the minerals program viewpoint this is probably the most important reason for acquisition of the mineral estate. The primary criteria would be consolidation of holdings into a more attractive developable package. A good example of this is the currently contemplated 'Meridian' exchange whereby checkerboard ownership would be consolidated into two potentially mineable tracts. This also provides a leasable block of coal which is much more desirable to a potential developer."

218.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

219.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

220.

The BLM agrees that an explanation is needed as to why the Preferred Level Alternative was chosen for each of the issues identified in the draft RMP/EIS. Therefore, that rationale is provided under the "Proposed Action" in Chapter 2 of the final RMP/EIS.

221.

Table 2.5 has been amended to show a continuation of current production by emergency leasing.

With respect to displaying the unsuitability acreages, see Response #192.

222.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

223.

Emergency leasing would continue current production of the existing mine in the Bull Mountains. One and one-half acres would be disturbed per year for the 8 years of production allowed under an emergency lease. This section has been rewritten to reflect this disturbance (see High Level Management Alternative, Chapter 2, FEIS).

224.

The purpose for the summary in the draft RMP/EIS is to reveal the significant environmental consequences of the total land use alternative to each of the resources affected. An assessment of the potential impacts of coal leasing for each resource under the Low Level Management Alternative is found in Chapter 4 of both the draft and final RMP/EIS.

225.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

226.

Comments of the State Historic Preservation Officer on the draft RMP indicated a need to explain current BLM cultural resource management strategies more fully. Appended to the document is a section on BLM management of cultural resources which addresses mitigation of cultural sites. See also assumptions regarding cultural resources in Chapter 4.

227.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

228.

Refer to Response #220.

229.

Determination of the 61 cultural sites that may be impacted by the selection of the Preferred Level Management Alternative is derived from Table 3.11 on page 81 of the draft RMP/EIS.

A cultural resource inventory for the 10,040 acres carried forward suitable for leasing pending further study in the Bull Mountain Coal Field has been started, but was only 30% complete at the time the draft RMP was written. This inventory is required as part of the coal unsuitability criteria (#7) and will be completed prior to lease consideration by the Regional Coal Team.

230.

This has been corrected in Chapter 3, Air Quality, FEIS. A regional monitoring program was concluded in October 1982 resulting in the designation of Billings and Laurel as Class II areas.

231.

High industry interest could have been expected, given the quality of the coal in the Bull Mountains.

232.

Refer to Responses #195 and #204. In highly fluctuating economic conditions for energy development, Louisiana Land and Exploration found it uneconomical to mine underground. This should not be construed to mean that the coal is of insufficient value for future industry interest.

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233.

The study referred to is entitled "Ground Water and Potential Coal Mining in the Bull Mountains of South Central Montana, by Keith Thompson, Open File Report Number MBMG-100". This study has been completed and will be printed in final form prior to November 1983. At that time, copies can be obtained upon request at either the BLM Montana State Office or the Montana Bureau of Mines and Geology. As we have stated previously, the BLM is not proposing to lease coal as a result of this document.

234.

The wildlife discussions referred to in Chapter 3 have been rewritten to specifically address the Bull Mountain coal field affected environment based on all Federal surface and subsurface ownership. The original habitat figures which were used and which are still included in the final RMP, addressed Federal surface acreage for the entire resource area. That is why the 170 figure for elk habitat appears small.

The environmental consequences section (Chapter 4) also includes a discussion of possible impacts as a result of Federal coal mining on all affected lands regardless of ownership.

235.

See the Appendices section in the FEIS for a summary of data available, and inventory needs for the wildlife related unsuitability criteria. These inventories are scheduled to begin in FY-84, contingent upon funding.

236.

As indicated on page 80 of the draft RMP/EIS, the visual resource inventory was completed for all of Musselshell County and a portion of Yellowstone County. This inventory did include the Bull Mountain coal fields. Approximately 50% of the Bull Mountain area was placed in a Class II designation while the remaining lands were placed in a Class IV designation.

This data, on a more detailed basis, is available for inspection at the Billings Resource Area.

237.

Estimates of cultural resource site densities were made from existing inventories (Lewistown District Class I Inventory) and from a survey of 30% of the acreage overlying Federal coal in the preferred alternative for the Bull Mountains. The BLM will complete the Bull Mountain cultural inventory as part of the full application of the unsuitability criteria.

238.

Refer to Response #150.

239.

The primary source for this statement is the RMP issues brochure. In addition to the brochure results, two surveys conducted in Musselshell and Carbon counties (John Short and Associates, 1978 and MT Energy MHD Research and Development Institute, Inc., 1979) provide support for the statement. The issues brochure addressed coal development in general. Results did not specify who was to determine the need for coal. It also did not collect information specific to the Bull Mountains.

240.

This has been restated to read "The BLM personnel are aware that opposition to coal mining exists in the county. The exact extent of this opposition is not known. This is also true of support for coal mining." (See Issue Related Attitudes for Coal, Chapter 3, FEIS.)

241.

All comments (testimony from hearings, letters) received in response to the draft document have been published with a response in this document. It is presumed that all individuals who cared to respond to the draft, have responded.

242.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

243.

This sentence was misstated. It has been corrected in the final RMP/EIS to read: "The impact discussions in this chapter relate primarily to public lands, however, an assessment of impacts on adjacent state and privately-owned lands was also made." It was not the intent of the BLM to portray that impacts on local economies and uses of adjacent or nearby non-Federal lands and non-public land surface over Federally-owned mineral interests were not analyzed or addressed in this document. A description of the Social/Economic impacts of each alternative is contained in Chapter 4 of the draft RMP/EIS (see pages 123, 131-132, 139-144, 154-156, and 163-164, DEIS).

244.

Some of the unsuitability criteria have already been applied. All of the relevant criteria would be applied completely before an area could be considered within a final lease sale EIS. The assumption was rewritten to clarify this fact.

245.

This section has been rewritten to clarify the processes of impact identification, and mitigation required before mine plan approval. Restoration of the topography to approximate original contour is required by both the Federal and state legislation passed subsequent to the 1973 MFP. (See General Impacts for Soils/Watershed [Water Quality and Streambank Protection], Chapter 4, FEIS.)

246.

This section has been rewritten to clarify the potential impacts to groundwater. (See General Impacts for Soils/Watershed [Groundwater], Chapter 4, FEIS.)

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247.

Total restoration of ponderosa pine habitat types has not been thoroughly studied and is not well documented in the in the literature. In the discussion of impacts and restoration, some assumptions relating to the time involved to regenerate a mature reproducing stand of ponderosa pine was used as the rationale for determining total restoration in the long term (25 years). However, as indicated on page 119 of the draft, total restoration of the disturbed areas may not be attained.

In the short term, and well into the long term, disturbed areas would see an increase in grass, forb and shrubby vegetative types which comprise the majority of elk and deer spring/summer dietary preference. It was on the basis of this analysis that BLM determined additional, desirable spring/summer range would be made available to these species.

Critical winter ranges for elk and deer will be recommended unsuitable for mining through application of criterion number 15. Nongame habitat would be destroyed through the duration of the mining activity.

The phrase, "more desirable habitats" has been replaced in the final RMP/EIS with "more socially tolerable habitats". It is anticipated that dislocation of wildlife created by mining activities will result in a reduction of numbers in all affected species. We anticipate their movement by any means natural to the species involved.

248.

The applicable Federal and state rules and regulations governing surface mining require a mining company to show that surface runoff will not degrade aquatic resources. If this cannot be demonstrated, a permit to mine is denied. Specific mitigation measures are addressed in a mine plan EIS required before a permit can be issued. These measures may take the form of sediment ponds, riprap, etc. Without a mine plan in hand, it is impossible to determine what mitigation methods would be suitable.

249.

The BLM has relatively small and scattered surface holdings in the Bull Mountain coal fields (Figures 3.3 and 3.5 of the draft RMP/EIS). Because of this ownership pattern, the overall impact of coal leasing for either underground or surface mining on recreation would be insignificant on public lands within the area. This is also true of the surrounding privately-owned lands. There are large expanses of publicly-owned lands administered by the BLM and U.S. Forest Service available for recreational purposes within a reasonable driving distance of the Bull Mountain area. Given this perspective, the overall impact to recreation would be minimal as stated on page 121 of the draft RMP/EIS.

250.

Impacts to cultural resources and visual resources from coal leasing are discussed in Chapter 4 of the draft RMP/EIS on the following pages:

Cultural Resources—pages 130, 138, 153 and 162
Visual Resources—pages 129, 138, 152 and 161

251.

The impacts are minimal and localized to the actual mined area. What impacts do occur are being mitigated by the approved mining plan under which the company is operating.

252.

See General Impact Section on page 116 of the draft RMP/EIS.

253.

Refer to Low Level impacts to Vegetation by coal, as rewritten in Chapter 4, FEIS.

254.

The 357 acres relates to maximum production potential anticipated over the 25 year long-term production. The BLM projects a maximum potential disturbance of approximately 18 acres per year at peak production levels. See page 25, paragraph 9 of the draft RMP for additional explanation.

Offsite impacts to wildlife cannot be reliably quantified until access roads and other surface appurtenances are located during the mine plan stage. Until the exact acreage to be mined is identified, it is impossible to determine, with any specificity, the affect on migration routes. However, it is reasonable to assume that such impacts are likely to occur and that they must be addressed during the mine plan stage.

Please refer to the Appendices section for a summary of wildlife data available, and inventory needs in order to apply the unsuitability criteria #9-15.

255.

The BLM cannot, and will not, eliminate any steps in the planning and leasing process. There is, however, some latitude in determining to what extent various other resources and concerns will be allowed to impact the coal resource. This portion of the document has been rewritten to clarify this point. (See Low Level Alternative, Attitudes Toward the Alternative, Chapter 4, FEIS.)

256.

Refer to Response #150.

257.

Refer to Response #255.

258.

Current budget restrictions and a compressed time schedule did not allow a color-coded map of each of the four alternatives. However, it is anticipated that such maps will be provided in the record of decision scheduled for completion in FY-84.

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259.

Rationale for recommending the Twin Coulee WSA as non-suitable for wilderness designation is provided in the Proposed Action section for Wilderness, Chapter 2 of the FEIS.

260.

Refer to Response #259.

261.

The BLM's preferred level of management for wilderness has been modified. (Refer to the Proposed Action for Wilderness for changes and rationale, Chapter 2, FEIS.)

262.

Response #273 addresses both the potential for joint agency management and the possibility of consolidation of lands within the Pryor Mountain WSAs.

283.

Refer to Response #261.

264.

Refer to Response #15.

265.

There are no plans for disposing of the BLM lands adjacent to Big Lake. We are working with the MDFWP to develop the waterfowl potential on BLM lands and the newly acquired state lands. In fiscal years 1983 and 1984, we intend to develop nesting islands, initiate the planting of dense nesting cover and install approximately 15 goose nesting platforms.

We have also proposed that the area be considered as a future site for investment of monies transferred to BLM by Ducks Unlimited specifically for development of high potential waterfowl areas.

266.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

267.

Refer to Response #112.

288.

Refer to Response #15.

289.

Persons leasing public land may not bar access to the public if public access exists. Therefore, another type of solution would need to be discussed.

270.

By their very nature, public lands must be managed for the public good. Free use is authorized under certain conditions. However, in almost all cases, use of the public land by a private individual for economic gain without just compensation by that user would not be considered in the public interest.

271.

All tracts of BLM land within the resource area having river frontage or displaying a riparian type of vegetative cover have received the highest priority for retention from a renewable resource standpoint. We recognize the wildlife habitat and recreational values of such lands and have not proposed that any of these tracts be considered for disposal.

272.

Rationale for recommending the Twin Coulee WSA as non-suitable for wilderness designation is provided in the Proposed Action section, Chapter 2 of the FEIS.

273.

Because the BLM, NPS and Forest Service are at different stages in the wilderness review process, and none of the public lands in the Pryor Mountains have been designated as wilderness, a coordinated wilderness management plan is premature. Based on comments submitted by the NPS and members of the public, the BLM has modified its recommendation for the 2,550 acre southern segment of the Big Horn Tack-On.

Wilderness management roles and responsibilities between the three Federal agencies represented in the Pryor Mountains will be decided at a later date if and when Congress decides to designate wilderness in the area.

The State of Montana and the BLM have indicated a willingness to exchange lands where public benefits would accrue. The state has recently expressed an interest in possible exchange of the school trust lands in the Pryor Mountains for other BLM administered lands.

274.

There are three parcels of public land adjacent to the City of Billings in the South Hills. Because of the values we have identified, two of the parcels have been placed in the retention category, while the third has been put in the "further study" category. Public land with significant recreational values and wildlife habitat will be retained.

275.

Refer to Response #168.

276.

Refer to Responses #159 and #165.

277.

Wildlife habitat condition ratings have not been completed on an allotment-by-allotment basis. Areas referred to as crucial habitat or habitats requiring special management attention are mapped on overlays and are available for inspection at the Billings Resource Area Office. Refer to Response #160 for an explanation of the approach to be used in updating and developing new allotment management plans. This is a coordinated process between the range and wildlife staffs to meet joint objectives. This process requires that problems or conflicts be dealt with on an individual allotment basis.

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Our initial assessment of problem areas was done through the allotment categorization process. An explanation of the categories and their meaning can be found on page 11 of the DEIS. Resource conflicts (including wildlife) played a key role in the assignment of allotment categories. This process is dynamic and will allow BLM the flexibility to change an allotment's category at any time as we identify problem areas or areas reach anticipated levels of improvement.

In addition, site-specific wildlife habitat problem areas were not brought to our attention in the scoping issue identification, criteria development or alternative development by interested publics.

278.

Methods and treatments considered are displayed in Table 2.2 on page 13 of the DEIS. Methodology for grazing management is displayed in Appendices 4.1 and 4.2 of the DEIS.

The increase in AUMs is calculated by subtracting the current authorized AUMs from the total AUMs produced by improving ecological range condition. Therefore, the more acres in fair or poor condition that have the capability to respond to either grazing treatments or vegetative manipulation, the larger the potential increase in AUMs.

See Responses #145 and #168.

279.

The allotment categorization (selective management) approach was designed to focus management efforts and funding to the allotments with the greatest need. The "I" allotments will receive first priority for the limited funds. The current budget is adequate to implement the planned actions on the "I" allotments. If increased funds are available, the project work identified for "M" and "C" allotments can be done.

The Billings Resource Area currently receives about $60,000 annually in range improvement funds. Over the 8 year implementation period, this would total $480,000 of which about $400,000 would actually be spent on projects with the remainder spent on project survey and design and contract preparation.

Table 2.2, pages 12 and 13 of the DEIS, show range improvements by management category which were considered in arriving at the cost of the High Level Alternative. As can be seen from this table, a substantial number of improvements were considered for "M" category allotments with a minor amount on "C" allotments. Costs of the various range improvements are shown on page A-27 of the draft. The cost of range improvements in "I" allotments totals $538,550. The cooperating ranchers would bear about $150,000 of this cost, mainly in fence construction and contributed labor and equipment on sagebrush burning, chiseling and crested wheatgrass renovation projects.

280.

Economic forecasts were provided in the preferred alternative where it was possible to do so. For example, see the draft RMP/EIS, page 35, paragraph 14 for estimated costs for wild horse management, Appendix 2.2 and page 30 for grazing management costs and page 36, paragraph 11 for wildlife improvement costs. It is not feasible at this time to provide cost estimates for all issue areas. For example, until specific access locations are determined, it is impossible to determine, even in a general sense, costs associated with providing recreational access. Costs associated with the coal, oil and gas, ORV and timber management programs are programmed as part of base program operational costs on an annual basis.

281.

Refer to Response #168.

282.

Refer to Responses #159 and #160.

283.

See Wildlife Assumptions section, Chapter 4, FEIS.

284.

Refer to Response #289.

285.

Refer to the Proposed Action for Wilderness for rationale on why the Twin Coulee WSA was not recommended for wilderness designation.

286.

Refer to Response #15.

287.

Refer to Response #159.

288.

Refer to Response #168.

289.

The Billings Resource Area wildlife program does not advocate timber harvest as a means to enhance wildlife habitats. We do, however, realize that small (most cuts in this resource area average 30 acres or less), carefully planned timber harvest programs can provide benefits to the wildlife resource by providing a more diverse vegetative community through an increase in forb and browse species production.

The preferred alternative proposes that approximately 70 MBF of timber be harvested annually. This would disturb approximately 30 acres. The only areas in the resource area which are being considered lie along the southeastern portion of the Little Snowy Mountains and on parcels of public land south of Big Timber, Montana. These areas were identified because they display a very dense overstory or are infested by the spruce budworm.

All cuts are carefully planned jointly by the timber and wildlife specialists. This ensures that no clear-cuts are allowed, and that no known crucial wintering or thermal cover areas are affected.

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The objective of the wildlife specialists' input is to provide small, irregularly shaped areas where forb and browse species production can be increased to provide additional forage for deer, elk and turkey. Some nongame species could also be expected to inhabit the newly created habitat. Species favoring old growth or decadent timber stands would be displaced, but not in significant numbers.

290.

Refer to Response #155.

291.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

292.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

293.

Refer to Response #15.

294.

Refer to Response #156.

295.

Refer to Response #112.

296.

As noted in the Appendix on Cultural Resource Management and in the Assumptions section to Chapter 4 of this document, BLM evaluates sites for the National Register of Historic Places using criteria set forth in 36 CFR 60.6. The BLM will pursue nomination of sites which qualify to the Register when their proper management requires full nomination and as time and funds permit. Effective management of some properties may be more efficiently accomplished through the "determination of eligibility" process. Both nominations and determinations are completed in consultation with State Historic Preservation Officer (SHPO).

297.

Estimates of human and financial resources required to implement cultural resource support of issues under each alternative are not provided in the RMP. Cultural resource compliance work in support of another activity such as range improvement is funded by the range program. Cost of this support is included in estimates for costs of range improvements, etc.

298.

Specific information is not provided about how the identification and evaluation of Billings Resource Area cultural properties will occur in a timely manner under each alternative. Scheduling these actions relative to other BLM undertakings is addressed in 36 CFR 800 and memoranda of agreement between the BLM and the Advisory Council on Historic Preservation.

299.

"Unaffected portions" of the resource area we interpret to mean public lands which are not likely to be impacted by surface disturbing activities resulting from BLM initiated or BLM authorized undertakings. Under the Cultural Resource Management Program, BLM conducts limited surveys for cultural resources on a continuing basis as time and funds permit in compliance with Section 110 of the National Historic Preservation Act of 1966 as amended. These inventories are directed to areas where prior data indicates a possible need for active resource management to protect important sites (see Appendix 4.7).

300.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

301.

Refer to Response #15.

302.

Refer to Responses #159, #160 and #165.

303.

The BLM feels that a 90 day review period is ample time for an adequate review of an EIS. "Ninety days shall be provided for review of the draft plan and draft environmental impact statement," states 43 CFR 1610.2(e). "The 90-day period shall begin when the Environmental Protection Agency publishes a notice of the filing of the draft environmental impact statement in the *Federal Register*." That notice was published April 15, 1983 and expired on July 15, 1983.

304.

Refer to Response #15. In addition, the amount of land listed in the disposal category that will actually be disposed of is not known at this time. Site-specific analysis has not as yet been done, and until such analysis is complete and shows a definite public benefit from disposal of a parcel of public land, disposal cannot take place. Exchange will be the preferred method of disposal as stated in the Proposed Action Section for Land Tenure Adjustment in this document.

The BLM has modified its recommendation for seven parcels of land in the Land Tenure Adjustment Area based on public comment (see Response #171).

305.

Refer to Response #155.

306.

Refer to Response #391.

307.

The BLM has recommended that the entire Pryor Mountain WSA and major portions of the Burnt Timber Canyon and Big Horn Tack-On WSUs be designated components of the NWPS (refer to Proposed Action for Wilderness in Chapter 2, FEIS for rationale for not recommending wilderness designation for the Twin Coulee WSA).

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308.

Additional analyses and language have been included in the final RMP which addresses these general concerns.

308.

The BLM feels that the land use planning stage is not the appropriate time to "consider all aspects of both leasing and exchange." We are only making Federal coal available for further consideration for leasing or exchange. The activity planning stage (regional EIS for coal leasing), in full consultation with the Powder River RCT, is a more appropriate focus for full consideration of leasing and/or exchange.

310.

No lands have been designated as unsuitable for the surface mining of mineral materials other than coal. Each application for the purchase or free-use of mineral materials will be assessed on a case-by-case basis. Appropriate stipulations would be developed to mitigate adverse impacts to sensitive resource values. Some areas have been designated as sensitive to mineral leasing where special stipulations may be applied during the lease application process (see "Areas Sensitive to Oil and Gas" Overlay in Map Pocket, FEIS).

311.

These changes have been made in the final RMP/EIS.

312.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

313.

Refer to Response #310.

314.

Under the Existing Management Alternative, BLM would not consider exchanges except for those which are legislatively mandated (for example, an AVF exchange where privately-owned coal has been precluded from mining because of an AVF designation). Only emergency coal leases would be issued to maintain present production levels. By regulation (43 CFR 3425.1-4) any area leased must be mined as part of an existing operation. The final RMP/EIS has been changed to clarify this statement and a map has been added to show the location of the existing Federal lease which would qualify for an emergency lease (see Existing Management Alternative, Chapter 2, FEIS).

315.

The analysis presented in the draft RMP represents BLM's "best estimate" of the possible impacts which might eventually occur from the decision to make coal available for further consideration for coal leasing for either underground or surface mining. This is in response to NEPA which requires analysis of various alternatives. Some additional analyses has also been added to the final RMP/EIS.

316.

Maps depicting areas acceptable for further consideration pending further study have been prepared (see Chapter 2, final RMP/EIS).

Only areas considered to be of high or moderate development potential are included in these figures. The BLM has eliminated most lands for which qualified surface owners were opposed to surface coal leasing.

All of the Federal coal within the boundaries of the Joliet-Fromberg and Bear Creek Fields is of high or moderate development potential for underground mining. The BLM has received no expressions of interest for coal from the Silvertip, Stillwater or Bridger Fields.

317.

The "...(no) changes in the existing public land pattern..." recommendation on page 29 of the draft concerns surface rights only. Coal exchanges can, in most cases, be consummated without changes in the surface ownership.

318.

This section has been rewritten to clarify the management alternative. A map has been added to illustrate those areas found acceptable for further consideration pending further study. The BLM will continue to program for inventory monies to gather the necessary data for completion of unsuitability criteria application. (See Coal Alternatives, Chapter 2, FEIS.)

319.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

320.

If a lease tract is delineated in the Bull Mountains for competitive leasing, the RCT will consider it in relation to other tracts that may be delineated. Environmental, economic and social impacts, mitigation of these impacts and the coal resource will be addressed, and the tracts selected and scheduled accordingly.

321.

These statements have been corrected in the final RMP/EIS.

322.

See Response #315 and also Chapters 2 and 4 of the final RMP/EIS for clarifying language requested in your comment.

323.

As in the past, mineral prospecting, exploration and development will be permitted. These operations will only be restricted when they conflict with sensitive resource values. Conflicts will be resolved through site-specific environmental assessments. The RMP was not intended to replace the need for these analyses.

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324.

The 70,000 acres subject to special leasing stipulations were identified in the footnote to Table 2.5 on page 41 of the DEIS. These areas were identified as "sensitive" in the Lewistown District *Programmatic Oil and Gas EA*. In response to this comment, the areas have been indicated on a map overlay provided with this final EIS, and further identified in the Appendices section.

325.

The BLM is a multiple use agency. As such, all resource development activities are permitted except where important resource values would be adversely affected. Areas of conflict were determined during impact analysis, when the proposed actions under each alternative (Table 2.5 of the DEIS) were displayed against existing resource values. The results were discussed in Chapter 4.

326.

BLM recognized in the RMP that exploration and development of energy and mineral resources was important. Access for these activities generally has been, and will continue to be provided. Opportunities to explore for locatable minerals has been expanded. Areas sensitive to oil and gas leasing have been identified (see Overlay for Sensitive Areas in Map Pocket, final RMP/EIS), and appropriate stipulations developed to protect these areas. Oil and gas exploration and development may not be compatible with the objectives of the PMWHR. Here exploration may be severely restricted. Site-specific assessment may result in a recommendation for no surface occupancy for portions of a lease application area. In critical parts of the horse range, the recommendation may be to not lease those areas at all.

327.

1. The BLM has provided for mineral resource development on public lands.
2. Lands having mineral potential were identified. Sources ofinformation include known producing areas, geologic inference and industry input. Maps which display this potential in greater detail are available in the Billings Resource Area Office.

   Access will be maintained to areas of known or inferred mineral potential.
3. The BLM has identified lands having sensitive resource values where mineral exploration may be restricted or constrained (see Sensitive Areas Overlay in Map Pocket of final RMP/EIS). These areas are the approximately 70,000 acres identified on page 41 and the 50 acres identified on page 37 of the draft RMP/EIS.

326.

The effects of each alternative to energy and other mineral resources is discussed in the Environmental Consequences section (Chapter 4) of the draft and final RMP/EIS.

329.

Refer to Response #323.

330.

Portions of the final RMP/EIS have been rewritten to further clarify BLM's compliance with FLPMA and NEPA.

331.

Refer to Response #325.

332.

Refer to Response #323.

333.

Refer to Response #324.

334.

Refer to Response #327.

335.

It is true that designated wilderness areas will be withdrawn from mineral appropriation, subject to valid existing rights. This withdrawal would have a minimal effect in the Pryor Mountain area, since investigations by the BLM and U.S. Geological Survey (USGS) have concluded that bentonite is the only known mineral deposit within the wilderness study areas which may be economically developed in the near future. From the size and tenor of the known uranium/vanadium deposits in the Pryor Mountain WSA and WSUs, the BLM has inferred that, should further mineralized zones be discovered, they could not be economically developed. The deposits would be too small and remote. There is moderate potential for the discovery of minable quantities of bentonite in the southern portion of the Pryor Mountain WSA (MT-067-206).

Within the Twin Coulee WSA, there are no known mineral deposits other than limestone. The Heath formation "oil" and metalliferous shales lie south of the WSA. The potential for discovery of a valuable mineral deposit within the area is very low. At any rate, BLM is not recommending wilderness designation for this area.

The BLM relies upon the U.S. Bureau of Mines to project trends in market conditions. It would be extremely difficult to accurately predict demand for a mineral resource 100 years in the future.

336.

Only the Pryor Mountain WSA contains mining claims. Since these claims were located before the passage of FLPMA, the claimant may impair wilderness suitability if necessary within the claim areas. The energy mineral potential for all wilderness study areas and units is considered low, however.

337.

The *Federal Register* of December 31, 1982 listed those areas that did not contain 5,000 acres of public land and had been improperly identified as WSAs as defined in Section 603 of FLPMA.

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The Solicitor's Opinion on which the decision to not designate areas of less than 5,000 acres as WSAs, went further, however. The Solicitor stated that the BLM was within its authority to study areas of less than 5,000 acres with identified wilderness values under the resource planning authority of Section 202 of FLPMA. Both Burnt Timber Canyon and the Big Horn Tack-On were properly recommended for wilderness study based on wilderness resource values identified during the inventory phase of the wilderness review.

Special authorization was obtained by the Montana State BLM Director to conduct wilderness studies for specific areas of less than 5,000 acres. These areas were believed to contain important wilderness values and could be managed as wilderness in conjunction with other Federal agency wilderness lands. The authority under which these areas were to be studied and a listing of affected study units was published in the *Federal Register* of Tuesday, May 10, 1983; Volume 48, No. 91, pages 21000-21002.

336.

Refer to Response #2.

339.

Exploration and development of mineral resources are recognized as important uses of public lands within the Billings Resource Area. Resource management plans are issue-driven documents; oil and gas exploration and development were not addressed as issues except within the PMWHR and other specified "sensitive" areas. Geothermal resource development was not considered feasible in this area.

Locatable minerals exploration and development are also considered issues only within the PMWHR, where these activities are presently prohibited (subject to valid existing rights) through mineral segregations which became effective in 1968 and 1970.

340.

In all "sensitive" areas, additional stipulations may be attached to oil and gas leases prior to their issuance. These stipulations may restrict exploration, but would not prohibit it. Outside of this approximately 70,000 acres, oil and gas would be leased with standard stipulations. Only within the PMWHR may the No Leasing option be exercised. The potential for discovery of commercial quantities of oil or gas within the horse range is considered low.

The Proposed Action recommends that only 50 acres remain segregated against mineral location. The remaining 28,536 acres would be reopened to exploration.

A mineral segregation affecting almost 2,000 acres along the southern boundary of the horse range became effective in 1980. The mineral character for this area was examined in 1978, and found to be nil. The mineral development potential was reexamined this year; it remains low for all commodities except bentonite, which has moderate development potential.

Mineral exploration would be administered through the 43 CFR 3809 (surface management) regulations. Operations would be restricted only if they would result in unnecessary or undue degradation of the surface.

341.

Refer to Response #3.

342.

The BLM, as the lead agency for management of the horse range, has the responsibility to control horse numbers at a level that will not contribute to the degradation of the basic soil and vegetative resource. The BLM is also accountable to other agencies (Forest Service, NPS, State of Montana) as well as private landowners within the area used by the horses to ensure that these conditions are being met. Due to the confined nature of this population, roundups "every few years" would very likely contribute to a further decline in vegetative conditions. This is supported in the order establishing the PMWHR signed by Secretary of the Interior, Stewart L. Udall on September 9, 1968, which states in part 4 . . .

> "The Bureau of Land Management, for the public lands within the Range, and in cooperation with the National Park Service within the National Recreation Area, will develop and keep current a management plan for the Range which will provide for the management of the wild horses and their habitat within a balanced program which considers all public values and without impairment of the productivity of the land."

343.

Refer to Response #4. In addition, attention will have to be given to the younger female age classes.

344.

The proposal in the Preferred Alternative was to relocate horses or groups of horses from overpopulated herd areas to areas where there is additional forage available. The objective is to keep horse numbers in balance with the forage produced rather than promote selective breeding.

345.

Refer to Response #5.

346.

Refer to Response #342.

347.

Refer to Response #6.

348.

Refer to Response #9.

349.

Refer to Response #9.

350.

Refer to Response #11.

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351.

Alternatives in this RMP assess the general, potential environmental impacts of leasing additional coal in the Bull Mountains so as to meet regional rather than just local energy needs. The Powder River RCT addresses future energy demands and makes available Federal tracts to help meet these demands. The RCT will use the RMP to decide whether coal in the Bull Mountains should help supply the forecasted demand. One or more tracts may be delineated from the area classified as suitable for further consideration pending further study by this RMP.

352.

It is true that the Bull Mountains, and many other portions of eastern Montana, are fragile, and difficult to revegetate. Unless a mining company was able to demonstrate a reasonable probability that it could reclaim the land, it would not obtain a permit to mine.

Springs and seeps in the Bulls do fluctuate. The Montana Bureau of Mines and Geology preliminary report on the groundwater in the Bull Mountains suggests that the effects of coal mining upon acquifers would be small and localized. Springs and seeps in undisturbed areas above the coal would be unaffected, if not connected with the coal aquifer.

353.

The Montana Bureau of Mines and Geology has issued a preliminary report (Thompson, 1982) which suggests that goundwater effects of surface mining would probably be localized (coal mining could lower water quantities and quality of wells in the vicinity of the mine). Springs or seeps from perched aquifers above a coal mine would be unaffected.

354.

The BLM has listened to resident opposition to coal leasing. A substantial portion of the Bull Mountain Field has been eliminated from further consideration for this reason. As our wildlife and cultural resource studies are completed, more lands may be eliminated.

355.

A stated objective for land tenure adjustment is to adjust the public land pattern in order to increase public access and improve recreational opportunities and wildlife habitat.

356.

Refer to Response #15.

357.

Refer to Response #156.

358.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

359.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

360.

Refer to Response #15.

361.

Refer to Response #65.

362.

Refer to Response #156.

383.

Refer to Response #15.

364.

Refer to Response #65.

365.

Refer to Response #159.

366.

Refer to Response #169.

367.

Refer to Responses #160 and #168.

369.

Refer to Response #15.

369.

Refer to Response #167.

370.

The BLM has identified, in the Proposed Action section in Chapter 2 of the final RMP/EIS, those areas in which the public has expressed an interest in obtaining needed access. As a practical matter, however, ingress and egress will have to be negotiated with adjacent landowners. The BLM has also identified public lands which might be used as exchange candidates to obtain needed access (see Appendices section on Land Tenure Proposal Tracts, FEIS).

371.

The fees charged for grazing privileges and other resource uses, are set by Congress and are beyond the scope of this plan.

372.

Public access to the BLM lands described in this letter is currently available by floating the Yellowstone River. Overland access is not available and members of the public have indicated that it would be desirable to obtain such access. However, such access would have to be negotiated with adjacent landowners.

373.

Refer to Response #15.

374.

Refer to Response #156.

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375.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

376.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

377.

Refer to Response #15.

378.

Refer to Response #156.

379.

Refer to Response #381.

380.

Refer to Response #44.

361.

The BLM will consider underground mining in the Bull Mountains as well as surface mining. No state mining permits would be issued unless a company was able to demonstrate a certainty that disturbed areas could be adequately reclaimed to the standards established by the state and Federal governments. The RMP encourages underground mining at the expense of surface mining in the Bulls.

382.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

383.

Refer to Response #65.

364.

Refer to Response #388.

385.

Refer to Response #44.

386.

Refer to Response #156.

387.

Refer to the Proposed Action for Land Tenure Adjustment in Chapter 2, FEIS.

388.

Generally, water wells in the central part of the Bull Mountains are deeper than wells in the northern portion. The sandstone aquifers here generally produce only small quantities of water.

A preliminary report by the Montana Bureau of Mines and Geology (Thompson, 1982) concluded that coal mining would affect groundwater supplies near mined areas. Water levels in wells could decline, but by state regulation, replacement sources of groundwater must be obtainable by the responsible mining company at their expense to replace sources that have been altered sufficiently to preclude current usage. If this isn't possible, mining will not occur.

389.

No mining could occur unless a company obtained a state mining permit. This permit would specify that the lands be reclaimed and returned to production. Please see Chapter 1, Coal, for a further explanation of the process involved.

390.

The BLM is not proposing to lease and mine coal with this document. However, we are attempting to determine what areas could be carried forward for further leasing consideration. The questions asked here could only be answered by an EIS document dealing with a specific mine plan proposal.

391.

User conflicts with adjacent homeowners in the South Hills area are well recognized by the BLM. In response, BLM has closed a 70 acre area adjacent to the existing housing subdivision and has proposed closing the remaining 1,200 acre area to 4-wheeled vehicle use (refer to the Proposed Action for ORV Use, Chapter 2, FEIS). However, the 1,200 acre area would remain open to ORV use by motorcyclists in deference to public demand.

392.

At the present time, ORV use is not restricted to the Ah-Nei Environmental Education area. The BLM recognizes that problems do exist and has recommended ORV use restrictions in the Proposed Action for ORV Use in Chapter 2 of the the final RMP/EIS. Enforcement of restrictions will be dependent upon available funds and manpower. However, the BLM does not anticipate being able to fund a full-time enforcement officer.

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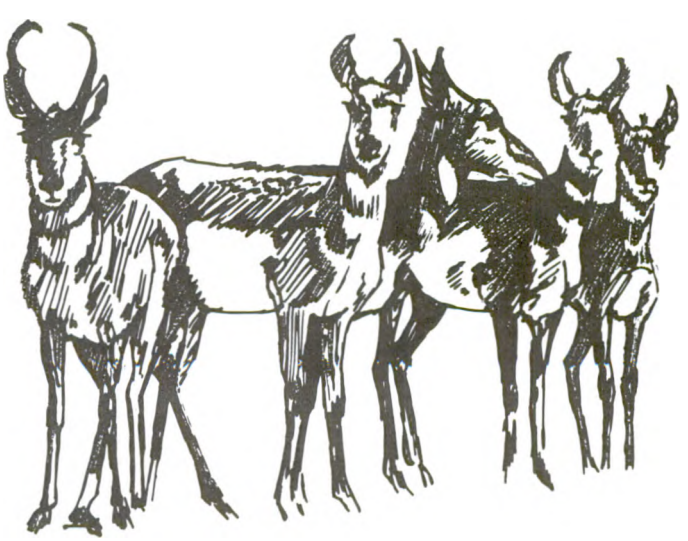

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Appendix

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APPENDIX 1.1: AGENCY'S RESPONSIBILITIES IN THE BILLINGS RESOURCE AREA

The following agencies share regulatory or reviewing responsibility in the Billings Resource Area.

The Advisory Council on Historic Preservation (ACHP), National Park Service (NPS), Montana State Historic Preservation Officer (SHPO) and Montana State Archeologist

Section 106 of the National Historic Preservation Act and Section 2b of Executive Order 11593 require that BLM consult with the ACHP, SHPO and the State Archeologist on actions that might affect historic or cultural values on public lands.

Bureau of Indian Affairs (BIA)

The Crow Indian Reservation is located in the southeastern portion of the resource area and is administered by the BIA (U.S. Department of the Interior).

Soil Conservation Service (SCS)

SCS (U.S. Department of Agriculture) is primarily concerned with the stabilization of soil and watershed resources, and increasing the productivity of private land. To improve production SCS has developed farm and ranch plan programs with soil conservation projects that include detention reservoirs, seeding and grazing systems that are designed to use the private range effectively. In an integrated program, other rangelands such as public land must be considered.

Through the Agricultural Stabilization and Conservation Service (ASCS), the Soil Conservation Service provides assistance to landowners who want to improve their private rangelands. The ASCS provides cost-sharing on fences, water developments and erosion control; the SCS provides technical support in planning, surveying, designing and laying out each project.

Corps of Engineers

This agency (U.S. Army) has permitting responsibility under Section 404 of the Navigable Water Act.

Minerals Management Service (MMS)

MMS (U.S. Department of the Interior) has jurisdiction over operational development of oil and gas deposits on public lands after BLM issues the lease.

Cooperative State Grazing Districts

Organized under the 1933 Montana Grass Conservation Act, these nonprofit cooperative associations of livestock operators are empowered to lease or buy grazing lands, to develop and manage district controlled lands and to allocate grazing preferences among members and nonmembers.

MUSSELSHELL COUNTY
Pole Creek
Kilby Butte

Environmental Protection Agency (EPA)

EPA is authorized under Section 309 of the Clean Air Act to review and evaluate environmental impact statements. Under Section 208, the Federal Water Pollution Control Act, this agency also monitors water pollution control planning through the Montana Department of Health and Environmental Sciences with which BLM coordinates land use planning.

Fish and Wildlife Service (FWS)

The Fish and Wildlife Service (U.S. Department of the Interior) manages Lake Mason National Wildlife Refuge, Halfbreed Lake National Wildlife Refuge and Hailstone National Wildlife Refuge. Fish and Wildlife also enforces the Endangered Species Act, manages migratory waterfowl and monitors the aerial hunting of predators.

Montana Department of Fish, Wildlife and Parks

Montana Department of Fish, Wildlife and Parks is responsible for management of fisheries, big and small game species and outdoor recreation. BLM has an agreement with Montana Department of Fish, Wildlife and Parks to maintain, manage and improve wildlife resources in Montana.

Old West Regional Commission

This State-Federal partnership established by the Public Works and Economic Development Act stimulates programs for the orderly growth and development of several states, including Montana. Under the Old West Regional Commission, the Montana Public Lands Council through the "Grazing Assistance and Evaluation Program" facilitates the exchange of information between public land users and BLM and evaluates allotment management plans.

National Park Service (NPS)

This agency (U.S. Department of the Interior) manages the Bighorn Canyon National Recreation Area with administrative headquarters located at Fort Smith, Montana.

Private Grazing Association

This association, grazing public lands in common, helps ease the management of allotments where there would otherwise be numerous permittees.

MUSSELSHELL COUNTY
Lake Mason Grazing Association

Montana Department of State Lands (MDSL)

State land, which often is intermingled with BLM land, is generally leased to individual livestock operators or cooperative state grazing districts on a long-term basis. Coordination with the Montana Department of State Lands is continuing as the department becomes increasingly involved in management planning and the development of range improvements.

Bureau of Reclamation (BOR)

The Bureau of Reclamation (U.S. Department of the Interior) manages Yellowtail Reservoir in Big Horn County, Montana.

U.S. Forest Service (USFS)

The USFS (U.S. Department of Agriculture) has jurisdiction over areas within the Custer, Gallatin and Lewis and Clark National Forests in Carbon, Stillwater, Golden Valley, Wheatland and Sweet Grass Counties, Montana.

Source: BLM, 1982

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APPENDIX 1.2: THE PLANNING PROCESS

The planning process described in BLM planning regulations 43 CFR part 1600, consists of nine action steps: (1) Inventory and Data Collection; (2) identification of issues; (3) Development of Planning Criteria; (4) Management Situation Analysis; (5) Alternative Formulation; (6) Assessment of Alternatives; (7) Selection of Preferred Alternative; (8) Selection of Resource Management Plan; and (9) Monitoring and Evaluation.

The first seven action steps have been completed and are summarized below.

Step 1. Identification of Issues

The general public, other Federal agencies, and state and local governments were asked to identify public land management issues in the resource area. Public meetings were held in Lovell, Wyoming and Billings and Lewistown, Montana during May, 1982 to discuss the wilderness issue. During the same month, meetings were also held in Bridger and Roundup, Montana to discuss the coal leasing issue. In addition, BLM identified management concerns that were not identified by these groups. This step determined the scope of the plan by determining the significant issues to be addressed.

Step 2. Inventory

Resource specialists reviewed base data from existing and updated inventories. Chapter 3 of this draft environmental impact statement describes the various resources that were inventoried. Existing plans were also reviewed to utilize recommendations, decisions and directives that would apply to all resource activities.

Step 3. Development of Planning Criteria

Planning criteria were developed to identify the considerations and constraints that would be applied to the analysis throughout the planning process. For example, the criteria, in conjunction with field inventory work, determined which public lands are suitable for disposal. This phase also included the formulation of the Lewistown District Manager's concepts about how to deal with the issues.

Step 4. Management Situation Analysis

This step describes the capability of the resources to respond to the identified issues and concerns. It describes the resources that would be affected, explains how the resources are currently being managed, and lists possible options for managing the resources. The Management Situation Analysis was used in developing the Affected Environment Chapter (Chap. 3). This document is on file at the BLM Billings Resource Area Office, 810 East Main Street, Billings, and is available for public information.

Step 5. Alternative Formulation

Management options analyzed in Step 4 were used to formulate the alternatives in this step. Management "themes" were developed to portray how the various issues would respond to changing program priorities and funding levels. Three alternatives evolved--the existing management level alternative describes present program direction and resource development trends; the low level alternative depicts a land-use plan which emphasizes fewer restrictions to resource development, and where funding is reduced; the high level alternative describes the opposite situation; environmental protection and enhancement would be stressed, and non-renewable resource development would be restricted. Where possible, coal unsuitability criteria were applied.

Step 6. Assessment of Alternatives

Specific actions proposed under each issue and alternative level were developed. In an interdisciplinary process, resource specialists then described the environmental consequences of each plan-wide alternative level to the various resources, including biological, physical, economic and social effects.

This step is the environmental analysis required by the National Environmental Policy Act and is presented in Chapter IV.

Step 7. Selection of Preferred Alternative

The Preferred Alternative presented in Chapter 2 was formulated based on (1) issues identified through the process; (2) decision criteria developed and considered by management; and (3) analysis of the impacts associated with the specific recommendations in each of the three previously formulated alternatives. The Preferred Alternative is the fourth alternative. It was also analyzed for environmental impacts as described in Step 6.

Step 8. Selection of Resource Management Plan

The eighth step is the plan selection approval process. It will be completed after publication of the final environmental impact statement.

Step 9. Monitoring and Evaluation

The plan will be implemented according to an implementation schedule included in the Record of Decision and Final Resource Management Plan. The implementation schedule will be subject to adjustment because of possible funding constraints. If additional detailed information is needed for implementation, smaller site-specific plans will be written. The effects of implementation will then be monitored and evaluated. Standards will be developed to determine whether or not mitigation measures are satisfactory, assumptions used in analysis of impacts were correct, and whether significant changes in related Federal, state, or local land use plans have been made. Monitoring and evaluation reports will be available for public review.

Source: 1982, BLM

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APPENDIX 1.3: ISSUES AND PLANNING CRITERIA

A planning issue is a matter of widespread interest and/or controversy about the allocation, use, production, protection and management practices (existing and/or potential) of the public lands.

Planning criteria are those standards which focus the planning analysis on possible solutions to resource management issues.

The following are those issues and criteria identified within the Billings Resource Area.

ISSUE 1: GRAZING MANAGEMENT PLANNING CRITERIA

Instruction Memorandum 82-292 indicates the types of criteria and process which will be used for analysis purposes in the Resource Management Plan (see Table 1). The criteria for categorizing allotments is contained in Table 2. These criteria are tentative pending final approval by the Lewistown District Grazing Advisory Board, District Manager and the State Director.

ISSUE 2: WILD HORSE MANAGEMENT PLANNING CRITERIA

1. Vegetative condition, i.e.:
   - A. Available forage/browse
   - B. Apparent trend
   - C. Utilization
2. Dietary preference/need of consumptive users.
3. Limitations on water availability and distribution for consumptive users.
4. Montana Department of Fish, Wildlife and Parks, U.S. Forest Service and National Park Service, long range goals for the area.
5. Erosion conditions.
6. Public expectations.
7. Pryor Mountain Wild Horse characteristics.

ISSUE 3: WILDLIFE PLANNING CRITERIA

1. Current use of area, i.e.: grazing, recreation and degree of conflict.
2. Potential uses of area, i.e.: mineral development, disposal and degree of conflict.
3. MDFW&P long range goals for the area.
4. Hunter use/need in area.
5. Potential for development, i.e.: nesting sites, reservoir construction, etc.
6. Anticipated impact to wildlife in case of a trade-off.

ISSUE 4: TIMBER MANAGEMENT PLANNING CRITERIA

Protection areas will be classified using one or more of the following criteria:

1. Areas surrounding sensitive or unique cultural and historical sites.
2. Wilderness study areas.
3. Elk calving areas and key winter habitat.
4. Designated recreation use areas or environmental education sites.
5. Consistency with other land use plans.
6. Social and economic concerns.
7. Visual resource management.
8. Critical watershed.

Exceptions to the protective classification will be considered under exceptional or extreme circumstances. For example: 1) instances where severe insect infestations occur where salvage is necessary, 2) where public safety is of paramount concern, 3) or where wildlife benefits outweigh other management concerns.

ISSUE 5: COAL PLANNING CRITERIA

1. Only those portions of the planning area which are underlain by coal resources of high or moderate development potential will be considered further.
2. Where adequate information exists, the 20 unsuitability criteria will be applied to lands of high/moderate development potential.
3. Qualified surface owners overlying Federal coal will be consulted for their views toward having their lands leased for coal.
4. Development of Federal coal may be further constrained or deferred by other multiple use values such as agriculture, hydrology and local social/economic concerns.

ISSUE 6: OIL AND GAS PLANNING CRITERIA

1. T&E plant and animal species habitat.
2. Crucial wildlife habitat.
3. Public attitudes and expectations for special use areas (Pryor Mountain Wild Horse Range).
4. Visual resource conflict areas.
5. Watershed conflicts.
6. Soil conditions which are subject to severe erosion.

ISSUE 7: LAND TENURE ADJUSTMENT PLANNING CRITERIA

Disposal Criteria:

1. Size of the tract and ownership pattern of the area. (320 acres or less.)
2. Proximity of the tract to population centers.
3. Lands which have been identified for specific uses by outside interest groups.
4. Lands with no significant recreational values, wildlife habitat, paleontological or cultural values.
5. Lands where water quantities are such that they don't benefit agriculture or wildlife.
6. Lands which do not contain government improvements or where such improvements are of low value.
7. Lands identified by communities for expansion and development needs.
8. Lands with no physical or legal access.
9. Lands with mineral/surface split estate.
10. Consistency with other Federal, state, local or tribal land use plans.
11. Lands with a history of long range agricultural trespass.
12. Lands which traditionally have not been leased for grazing purposes.
13. Lands with potential for intensive agricultural uses.

Retention Criteria:

1. Size of the tract and ownership pattern.
2. Lands withdrawn to BLM or other agencies.
3. Lands with mineral development potential and/or mining claims.
4. Lands with significant recreational values, wildlife habitat, paleontological or cultural values.
5. Presence of water in usable quantities for livestock grazing or agriculture, or to benefit wildlife.
6. Lands within a wilderness study area.
7. Lands containing valid existing water rights.
8. Lands with valuable government improvements present.
9. Lands with physical and legal access.
10. Lands adjacent to the Yellowstone River.

ISSUE 8: CLASSIFICATIONS PLANNING CRITERIA

1. Public attitude expectations.
2. Consistency with original purposes for classification.

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ISSUE 9: RECREATIONAL ACCESS PLANNING CRITERIA

1. Consistency with other plans.
2. Access will be avoided where there are sensitive cultural or historic sites, sensitive wildlife habitats or soil conditions.
3. Public recreation opportunities which are currently in high or increasing demand and which have scarce or limited access will be considered a priority. (Example: canoeing or float boat use on Yellowstone River, fishing access.)
4. Adjacent landowner concerns will be considered before providing access.

ISSUE 10: OFF-ROAD VEHICLE USE PLANNING CRITERIA

1. Public interest or demand.
2. User conflicts.
3. Identified wildlife or cultural resource conflicts.
4. Potential for excessive soil erosion.
5. Visual resource management Class I and II areas.
6. Presence of natural or manmade hazards which cannot be mitigated.
7. User access requirements for inventory, exploration, use supervision, maintenance, development and extraction of public land resources or maintenance of facilities on public lands.
8. Wilderness study areas.

ISSUE 11: ENVIRONMENTAL EDUCATION PLANNING CRITERIA

1. Public interest will be used to determine the need for environmental education sites.
2. Bureau budgetary and personnel capabilities.
3. Demand/interest in these sites for other uses.
4. Visitor use figures.

ISSUE 12: WINDDRINKER (WILD HORSE INTERPRETATIVE OVERLOOK) PLANNING CRITERIA

1. Consistency with other plans, i.e., U.S. Forest Service, National Park Service, community of Lovell, Wyoming.
2. Visitor use figures (traffic counts in U.S. Forest Service, Pryors, Bighorns, National Park Service, BLM).
3. Cost estimates.
4. Public expectations.
5. Cultural resource values.

ISSUE 13: WILDERNESS PLANNING CRITERIA

1. Wilderness values:

   A. The quality of the area's mandatory wilderness characteristics.
   B. The presence or absence, and the quality of special ecological or geological features and other features of scientific and educational, scenic or historical value.
   C. The benefits to other multiple resource values and uses which wilderness designation of the area could ensure.
   D. The extent to which wilderness designation of the area under study would contribute to expanding the diversity of the National Wilderness Preservation System from the standpoint of:

      1. expanding the diversity of ecosystems and landforms.
      2. expanding the opportunities for solitude or recreation within a day's driving time (5 hours) of major population centers.
      3. balancing the geographic distribution of wilderness areas.

2. Manageability:

   The area must be capable of being effectively managed to preserve its wilderness character.

QUALITY STANDARDS

1. Energy and mineral resource values. (Consider all identified or potential energy and mineral resource values.)
2. Impacts on other resources:
   The extent to which other resource values or uses of the area would be foregone or adversely affected as a result of wilderness designation.
3. Impact of nondesignation on wilderness values, alternative uses of WSA if area is not designated as wilderness and the extent to which the wilderness values of the area would be foregone or adversely affected as a result of this use.
4. Public comment:
   Comments received from interested and affected publics at all levels - local, state, regional and national.
5. Local social and economic effects:
   Any significant social and economic effects as identified through the wilderness study process, which designation of the area would have on local areas.
6. Consistency with other plans:
   The extent to which the recommendation is consistent with officially approved and adopted resource-related plans of other Federal agencies, state and local governments and Indian tribes.

CORRIDOR PLANNING CRITERIA

Avoidance Areas

1. Areas where establishment and use of corridors conflict with land use/land management objectives.

Examples:

   A. Specially managed areas, such as areas designated for developed and primitive recreation, research natural areas, environmental education areas.

   B. Environmentally sensitive areas (certain wildlife habitat areas, faults, wetlands, slump areas, etc.).

   C. Archeological and historical sites.

   D. Areas with specific visual objectives which conflict with facility placement.

   E. Active coal mining units.

2. Areas with special or unique values that have been accorded specific and sometimes protected status through "legislative" action. These values conflict with facility placement.

   A. National recreation areas (NRA).

   B. Wild, scenic and recreational rivers.

   C. Nationally classified trails.

   D. State recreation areas.

3. Areas which have been identified by local government bodies (within their jurisdictional boundaries) as not suitable for the placement of linear facilities.

   A. Urban residential areas.

   B. City parks.

Exclusion Areas

1. Include only those areas with a legal Congressional mandate that excludes linear facilities; example: national wilderness lands.

Source: BLM, 1982

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APPENDIX 1.4: COAL UNSUITABILITY CRITERIA

Criteria for assessing lands unsuitable for all or certain stipulated methods of coal mining.

Criterion Number 1. All Federal lands included in the following land systems or categories shall be considered unsuitable: National Park System, National Wildlife Refuge System, National System of Trails, National Wilderness Preservation System, National Wild and Scenic Rivers System, National Recreation Areas, lands acquired with money derived from the Land and Water Conservation Fund, National Forests and Federal lands in incorporated cities, towns and villages.

Exceptions. (i) A lease may be issued within the boundaries of any National Forest if the Secretary finds no significant recreational, timber, economic or other values which may be incompatible with the lease; and (A) surface operations and impacts are incident to an underground coal mine, or (B) where the Secretary of Agriculture determines, with respect to lands which do not have significant forest cover within those National Forests west of the 100th meridian, that surface mining may be in compliance with the Multiple-Use Sustained-Yield Act of 1960, the Federal Coal Leasing Amendments Act of 1976 and the Surface Mining Control and Reclamation Act of 1977. (ii) A lease may be issued within the Custer National Forest with the consent of the Department of Agriculture as long as no surface coal mining operations are permitted.

Exemptions. The application of this criterion to lands within the listed land systems and categories is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977. The application of the portion of this criterion applying to land proposed for inclusion in the listed systems does not apply to lands: to which substantial legal and financial commitments were made prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 2. Federal lands that are within rights-of-way or easements or within surface leases for residential, commercial, industrial or public purposes on Federally owned surface shall be considered unsuitable.

Exceptions. A lease may be issued, and mining operations approved in such areas if the surface management agency determines that:

(i) All or certain types of coal development (e.g., underground mining) will not interfere with the purpose of the right-of-way or easement; or
(ii) The right-of-way or easement was granted for mining purposes; or
(iii) The right-of-way or easement was issued for a purpose for which it is not being used; or
(iv) The parties involved in the right-of-way or easement agree, in writing, to leasing; or
(v) It is impractical to exclude such areas due to the location of coal and method of mining and such areas or uses can be protected through appropriate stipulations.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 3. Federal lands affected by section 522(e)(4) and (5) of the Surface Mining Control and Reclamation Act of 1977 shall be considered unsuitable. This includes lands within 100 feet of the outside line of the right-of-way of a public road or within 100 feet of a cemetery, or within 300 feet of any public building, school, church, community or institutional building or public park or within 300 feet of an occupied dwelling.

Exceptions. A lease may be issued for lands:

(i) Used as mine access roads or haulage roads that join the right-of-way for a public road;
(ii) For which the Office of Surface Mining Reclamation and Enforcement has issued a permit to have public roads relocated;
(iii) If, after public notice and opportunity for public hearing in the locality, a written finding is made by the authorized officer that the interests of the public and the landowners affected by mining with 100 feet of a public road will be protected;
(iv) For which owners of occupied buildings have given written permission to mine within 300 feet of their dwellings.

Exemptions. The application of this criterion is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977.

Criterion Number 4. Federal lands designated as wilderness study areas shall be considered unsuitable while under review by the Administration and the Congress for possible wilderness designation. For any Federal land which is to be leased or mined prior to completion of the wilderness inventory by the surface management agency, the environmental assessment or impact statement on the lease sale or mine plan shall consider whether the land possesses the characteristics of a wilderness study area. If the finding is affirmative, the land shall be considered unsuitable, unless issuance of noncompetitive coal leases and mining on leases is authorized under the Wilderness Act and the Federal Land Policy and Management Act of 1976.

Exemption. The application of this criterion to lands for which the Bureau of Land Management is the surface management agency and lands in designated wilderness areas in National Forests is subject to valid existing rights.

Criterion Number 5. Scenic Federal lands designated by visual resource management analysis as Class I (an area of outstanding scenic quality or high visual sensitivity) but not currently on the National Register of Natural Landmarks shall be considered unsuitable. A lease may be issued if the surface management agency determines that surface coal mining operations will not significantly diminish or adversely affect the scenic quality of the designated area.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 6. Federal lands under permit by the surface management agency, and being used for scientific studies involving food or fiber production, natural resources or technology demonstrations and experiments shall be considered unsuitable for the duration of the study, demonstration or experiment, except where mining could be conducted in such a way as to enhance or not jeopardize the purposes of the study, as determined by the surface management agency, or where the principal scientific user or agency gives written concurrence to all or certain methods of mining.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 7. All districts, sites, buildings, structures and objects of historic, architectural, archeological or cultural significance on Federal lands which are included in or eligible for inclusion in the National Register of Historic Places, and an appropriate buffer zone around the outside boundary of the designated property (to protect the inherent values of the property that make it eligible for listing in the National Register) as determined by the surface management agency, in consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Office shall be considered unsuitable.

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Exceptions. All or certain stipulated methods of coal mining may be allowed if the surface management agency determines, after consultation with the Advisory Council on Historic Preservation and State Historic Preservation Office that the direct and indirect effects of mining, as stipulated, on a property in or eligible for the National Register of Historic Places will not result in significant adverse impacts to the property.

Exemptions. The application of this criterion to a property listed in the National Register is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977. The application of the criterion to buffer zones and properties eligible for the National Register does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 8. Federal lands designated as natural areas or as National Natural Landmarks shall be considered unsuitable.

Exceptions. A lease may be issued and mining operation approved in an area or site if the surface management agency determines that:

(i) With the concurrence of the state, the area or site is of regional or local significance only;
(ii) The use of appropriate stipulated mining technology will result in no significant adverse impact to the area or site; or
(iii) The mining of the coal resource under appropriate stipulations will enhance information recovery (e.g., paleontological sites).

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which includes operations on which a permit has been issued.

Criterion Number 9. Federally designated critical habitat for threatened or endangered plant and animal species, and habitat for Federal threatened or endangered species which is determined by the Fish and Wildlife Service and the surface management agency to be of essential value and where the presence of threatened or endangered species has been scientifically documented, shall be considered unsuitable.

Exception. A lease may be issued and mining operations approved if, after consultation with the Fish and Wildlife Service, the Service determines that the proposed activity is not likely to jeopardize the continued existence of the listed species and/or its critical habitat.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 10. Federal lands containing habitat determined to be critical or essential for plant or animal species listed by a state pursuant to state law as endangered or threatened shall be considered unsuitable.

Exception. A lease may be issued and mining operations approved it, after consultation with the state, the surface management agency determines that the species will not be adversely affected by all or certain stipulated methods of coal mining.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 11. A bald or golden eagle nest or site on Federal lands that is determined to be active and an appropriate buffer zone of land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

Exceptions. A lease may be issued if:

(i) It can be conditioned in such a way, either in manner or period of operation, that eagles will not be disturbed during breeding season; or
(ii) The surface management agency, with the concurrence of the Fish and Wildlife Service, determines that the golden eagle nest(s) will be moved.
(iii) Buffer zones may be decreased if the surface management agency determines that the active eagle nests will not be adversely affected.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 12. Bald and golden eagle roost and concentration areas on Federal lands used during migration and wintering shall be considered unsuitable.

Exception. A lease may be issued if the surface management agency determines that all or certain stipulated methods of coal mining can be conducted in such a way, and during such periods of time, to ensure that eagles shall not be adversely disturbed.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 13. Federal lands containing a falcon (excluding kestrel) cliff nesting site with an active nest and a buffer zone of Federal land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

Exception. A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the falcon habitat during the periods when such habitat is used by the falcons.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 14. Federal lands which are high priority habitat for migratory bird species of high Federal interest on a regional or national basis, as determined jointly by the surface management agency and the Fish and Wildlife Service, shall be considered unsuitable.

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Exception. A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the migratory bird habitat during the periods when such habitat is used by the species.

Exemption. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 15. Federal lands which the surface management agency and the state jointly agree are fish and wildlife habitat for resident species of high interest to the state and which are essential for maintaining these priority wildlife species shall be considered unsuitable. Examples of such lands which serve a critical function for the species involved include:

(i) Active dancing and strutting grounds for sage grouse, sharp-tailed grouse and prairie chicken;
(ii) Winter ranges most critical for deer, antelope and elk; and
(iii) Migration corridors for elk.

A lease may be isued if, after consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not have a significant long-term impact on the species being protected.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 16. Federal lands in riverine, coastal and special floodplains (100-year recurrence interval) on which the surface management agency determines that mining could not be undertaken without substantial threat of loss of life or property shall be considered unsuitable for all or certain stipulated methods of coal mining, and to the natural and beneficial values of the floodplain on the lease tract and downstream.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 17. Federal lands which have been committed by the surface management agency to use as municipal watersheds shall be considered unsuitable.

Exception. A lease may be issued where the surface management agency in consultation with the municipality (incorporated entity) or the responsible governmental unit determines, as a result of studies, that all or certain stipulated methods of coal mining will not adversely affect the watershed to any significant degree.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 18. Federal lands with National Resource Waters, as identified by states in their water quality management plans, and a buffer zone of Federal lands 1/4 mile from the outer edge of the far banks of the water, shall be unsuitable.

Exception. The buffer zone may be eliminated or reduced in size where the surface management agency determines that it is not necessary to protect the National Resource Waters.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 19. Federal lands identified by the surface management agency, in consultation with the state in which they are located, as alluvial valley floors according to the definition in § 3400.0-5(a) of this title, the standards in 30 CFR Part 822, the final alluvial valley floor guidelines of the Office of Surface Mining Reclamation and Enforcement when published and approved state programs under the Surface Mining Control and Reclamation Act of 1977, where mining would interrupt, discontinue or preclude farming, shall be considered unsuitable. Additionally, when mining Federal land outside an alluvial valley floor would materially damage the quantity or quality of water in surface or underground water systems that would supply alluvial valley floors, the land shall be considered unsuitable.

Exemptions. This criterion does not apply to surface coal mining operations which produced coal in commercial quantities in the year preceding August 3, 1977, or which had obtained a permit to conduct surface coal mining operations.

Criterian Number 20. Federal lands in a state to which is applicable a criterion (i) proposed by that state, and (ii) adopted by rulemaking by the Secretary, shall be considered unsuitable.

Exceptions. A lease may be issued when:

(i) Such criterion is adopted by the Secretary less than 6 months prior to the publication of the draft comprehensive land use plan or land use analysis plan, or supplement to a comprehensive land use plan, for the area in which such land is included; or
(ii) After consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not adversely affect the value which the criterion would protect.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Underground mining exemption from criteria.

(a) Federal lands with coal deposits that would be mined by underground mining methods shall not be assessed as unsuitable where there would be no surface coal mining operations, as defined in § 3400.0-5 of this title, on any lease, if issued.
(b) Where underground mining will include surface operations and surface impacts on Federal lands to which a criterion applies, the lands shall be assessed as unsuitable unless the surface management agency finds that a relevant exception or exemption applies.

Source: CFR 3461.1, BLM, 1981

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APPENDIX 1.5: OIL AND GAS STIPULATIONS

UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Land Management

_____
(Serial Number)

OIL AND GAS LEASE STIPULATIONS

CULTURAL AND PALEONTOLOGICAL RESOURCES — The Federal surface management agency is responsible for assuring that the leased lands are examined to determine if cultural resources are present and to specify mitigation measures. Prior to under-taking any surface-disturbing activities on the lands covered by this lease, the lessee or operator, unless notified to the contrary by the authorized officer of the surface management agency, shall:

1. Engage the services of a qualified cultural resource specialist acceptable to the Federal surface management agency to con-duct an intensive inventory for evidence of cultural resource values;

2. Submit a report acceptable to the authorized officer of the surface management agency and the District Engineer, Geological Survey; and

3. Implement mitigation measures required by the surface management agency to preserve or avoid destruction of cultural resource values. Mitigation may include relocation of proposed facilities, testing and salvage or other protective measures. All costs of the inventory and mitigation will be borne by the lessee or operator, and all data and materials salvaged will remain under the jurisdiction of the U.S. Government as appropriate.

The lessee or operator shall immediately bring to the attention of the District Engineer, Geological Survey, or the authorized officer of the Federal surface management agency any cultural or paleontological resources or any other objects of scientific interest dis-covered as a result of surface operations under this lease, and shall leave such discoveries intact until directed to proceed by the District Engineer, Geological Survey.

ENDANGERED OR THREATENED SPECIES — The Federal surface management agency is responsible for assuring that the leased land is examined prior to undertaking any surface-disturbing activities to determine effects upon any plant or animal species, listed or proposed for listing as endangered or threatened, or their habitats. The findings of this examination may result in some restrictions to the operator's plans or even disallow use and occupancy that would be in violation of the Endangered Species Act of 1973 by detrimentally affecting endangered or threatened species or their habitats.

The lessee/operator may, unless notified by the authorized officer of the surface management agency that the examination is not necessary, conduct the examination on the leased lands at his discretion and cost. This examination must be done by or under the supervision of a qualified resources specialist approved by the surface management agency. An acceptable report must be provided to the surface management agency identifying the anticipated effects of a proposed action on endangered or threatened species or their habitats.

ESTHETICS — To maintain esthetic values, all surface-disturbing activities, semipermanent and permanent facilities may require special design including location, painting and camouflage to blend with the natural surroundings and meet the intent of the visual quality objectives of the Federal surface management agency.

EROSION CONTROL — Surface disturbing activities may be prohibited during muddy and/or wet soil periods. This limitation does not apply to operation and maintenance of producing wells using authorized roads.

CONTROLLED OR LIMITED SURFACE USE STIPULATION — This stipulation may be modified when specifically approved in writing by the District Engineer, Geological Survey, with concurrence of the Federal surface management agency. Distances and/or time periods may be made less restrictive depending on the actual onground conditions. The prospective lessee should contact the Federal surface management agency for more specific locations and information regarding the restrictive nature of this stipulation.

The lessee/operator is given notice that the lands within this lease may include special areas and that such areas may contain special values, may be needed for special purposes, or may require special attention to prevent damage to surface and/or othe resources. Possible special areas are identified below. Any surface use or occupancy within such special areas will be strictly controlled or, if absolutely necessary, excluded. Use or occupancy will be restricted only when the Geological Survey and/or th surface management agency demonstrates the restriction necessary for the protection of such special areas and existing or planned uses. Appropriate modifications to imposed restrictions will be made for the maintenance and operations of producing oil and gas wells.

After the Federal surface management agency has been advised of specific proposed surface use or occupancy on the leased lands, and on request of the lessee/operator, the Agency will furnish further data on any special areas which may include:

100 feet from the edge of the rights-of-way from highways, designated county roads and appropriate federally-owned or controlled roads and recreation trails.

500 feet, or when necessary, within the 25-year flood plain from reservoirs, lakes, and ponds and intermittent, ephemeral or small perennial streams; 1,000 feet, or when necessary, within the 100-year flood plain from larger perennial streams, rivers, and domestic water supplies.

500 feet from grouse strutting grounds. Special care to avoid nesting areas associated with strutting grounds will be [illegible] during the period from March 1 to June 30. One-fourth mile from identified essential habitat of state and federal sensitive species. Crucial wildlife winter ranges during the period from December 1 to May 15, and in elk calving areas, during the period from May 1 to June 30.

300 feet from occupied buildings, developed recreational areas, undeveloped recreational areas receiving concentrated public use and sites eligible for or designated as National Register sites.

Seasonal road closures, roads for special uses, specified roads during heavy traffic periods and on areas having restrictive off-road vehicle designations.

On slopes over 30 percent, or 20 percent on extremely erodable or slumping soils.

_____ Date

_____ Lessee's Signature

Source: BLM, 1981

MSO 3100-47c (April 1981)

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APPENDIX 1.6: STATE DIRECTOR GUIDANCE LAND PATTERN REVIEW CRITERIA
(TAKEN FROM STATE DIRECTOR GUIDANCE FOR RESOURCE MANAGEMENT PLANNING
IN MONTANA AND THE DAKOTAS, APRIL, 1983).

LAND PATTERN REVIEW CRITERIA

The public lands subject to these criteria are those lands, minerals, or interests in land administered by BLM. Criteria are presented to assist in categorizing the public lands for retention, disposal, or further study. Criteria are also provided to facilitate the selection of lands to be received in exchanges or other types of acquisition. The criteria range from specific to general and are designed to provide direction for statewide consistency while allowing the manager flexibility in identifying circumstances which dictate the category in which lands can be placed.

A. Retention - These are lands which will remain in public ownership and be managed by BLM. BLM is interested in exchanges to improve manageability of areas important with public values. Although the underlying philosophy is long term public ownership, minor adjustments involving sales and exchanges of lands may occur when the public interest is better served.

1. Areas of national environmental significance, including but not limited to:

   a. Wilderness, Wilderness Study Areas and Former WSAs being Studied for Protective Management
   b. Wild & Scenic Rivers
   c. National Scenic & Historic Trails and Study Trails
   d. National Conservation Areas
   e. Wetlands and Riparian Areas under Executive Order 11990.
   f. Other Congressionally Designated Areas and Study Areas
   g. Wild Horse Management Areas
   h. Areas of Critical Environmental Concern

2. Areas of national economic significance including, but not limited to:

   a. Designated Mineral Resource Areas where disposal of the surface would unnecessarily interfere with the logical development of the mineral estate, e.g., surface minerals, coal, phosphate, know geologic structures, etc.

   b. Public lands containing strategic minerals needed for national defense.

3. Public lands used in support of national defense, including but not limited to National Guard manuever areas.

4. Areas where management is cost-effective or lands containing other important characteristics and public values which can best be managed in public ownership by BLM, including but not limited to:

   a. strategic tracts along rivers, streams, lakes, ponds, springs, and trails
   b. community watersheds and/or floodplains
   c. wildlife priority areas as identified in Appendix 1
   d. important hunting or fishing areas
   e. recreation sites and areas

5. Lands with a combination of broad multiple use values which dictate they should be retained in public ownership and managed by BLM.

6. Areas where future plans will lead to further consolidation and improvement of land patterns and reduce the costs of management.

7. Areas which the general public, state and local government consider suitable for permanent public ownership.

8. Public lands withdrawn by the BLM or other federal agency for which the purpose of the withdrawal remains valid and the resource uses can be managed by BLM concurrently.

9. Public lands that contributes significantly to the stability of the local economy by virtue of federal ownership.

10. Public lands which provide public access and contain previously mentioned public values which, when considered together, warrant their retention.

B. Disposal - These are lands identified for potential removal from public ownership through sale or exchange, or through transfer to federal, state, county or local public entities. In addition to land internally identified for disposal, BLM will respond to proposals from the public. Disposal decisions will be made in the public interest based upon the following criteria.

1. Lands specifically identified through land use plans for sale, exchange, transfer or Recreation and Public Purposes Act applications.

2. Lands of limited public value.

3. Widely scattered parcels which are difficult for BLM to manage with anything beyond minimal custodial administration.

4. Lands with high public values proper for management by other federal agencies, or state or local government. Incorporate, when applicable, the objectives of the Secretary's Good Neighbor Policy.*

5. Lands which will serve important public objectives (such as community expansion) as provided in FLPMA Sec. 203(a)(3).

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*The Secretary's program inviting state governors to participate in the nomination of federal lands needed by state and local governments and to expedite their transfer under the Recreation and Public Purposes Act.

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6. Lands where disposal would aid in aggregating or repositioning other public lands or public land resource values in retention areas to facilitate national, state and local objectives.

7. Lands acquired for a specific federal purpose which are no longer required for that or any other federal purpose.

8. Lands with long term unauthorized use problems, and are not required for specific public purposes.

9. Lands where disposal would increase the range of economic opportunities provided to the general public.

10. Lands in which the highest value or most appropriate long term use is agriculture, commercial or industrial development.

11. Lands involved in BLM/FS jurisdictional transfer, state indemnity selections, ongoing exchanges will continue as initiated.

C. Further Study - Lands that fail to clearly meet either retention or disposal criteria, will be subject to further study. Lands in this category will include:

1. Lands where disposition would pose questions as to consistency with other federal, state, local government or tribal land use plans.

2. Lands under withdrawal review.

3. Lands where less than full fee conveyance would reserve specifically identified significant public values to protect public interests.

4. Lands where management is not cost-effective, but not clearly negative, and multiple use values are marginal.

5. Lands where cooperative management best serves the public interest.

6. Lands with potential for future public use-based on developing needs.

7. Lands with potential for transfer under the Good Neighbor program.

8. Lands in areas of public access deficiencies.

D. Selection Criteria - Used to evaluate proposals which would result in the transfer of lands or minerals to the Bureau of Land Management through exchange or other transactions.

These criteria help to assure that any BLM decision to acquire a tract of land provides significant public benefits. The criteria range from "general" standards, against which to evaluate all proposals, to "specific" guidelines covering the selected or prioritized program areas.

These standards are designed to provide consistent direction while allowing the line manager flexibility to meet local, state and national needs.

GENERAL CRITERIA

All proposals will be evaluated to determine if the selected lands will:

1. Facilitate access to areas retained for long term public use.

2. Enhance Congressionally designated areas, rivers or trails.

3. Be primarily focused in the "retention" areas. Acquisition in "Further Study" areas or "disposal" areas will only be considered if the action leads to and/or facilitates long term needs or program objectives.

4. Facilitate national, state and local BLM priorities or mission statement needs.

5. Place emphasis where BLM land use or activity plans are completed. Proposals must facilitate implementation and/or be consistent with these plans.

6. Stabilize or enhance local economies or values.

7. Meet long term public land management goals as opposed to short term.

8. Be of sufficient size to improve use of adjoining public lands or, if isolated, large enough in scale to allow the identified potential public land use.

9. Allow more diverse use, more intensive use, or a change in uses to better fulfill the Bureau's mission.

10. Maintain or enhance important and recognized public land values. Especially noteworthy are identified, designated, special or high interest value areas.

11. Enhance the opportunity for new or emerging public land uses or values.

12. Contribute to a wide spectrum of uses or large number of public land users.

13. Facilitate management practices, uses, scale of operations or degrees of management intensity that are viable under economic program efficiency standards.

14. Secure for the public significant water related land interests. These interests will include lake shore, river front, stream, pond or spring sites.

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APPENDIX 1.7

United States Department of the Interior

2355 (8/3)

BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

June 18, 1981

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Organic Act Directive No. 81-11

To: Directorate, AFOs

From: Director

Subject: Review of Land Classifications

A number of States have asked for guidance in the review of classifications called for by Section 202(d) of the Federal Land Policy and Management Act (FLPMA). Pending completion of Bureau of Land Management (BLM) Manual Section 2355, Withdrawal Review, the following precepts and procedures apply:

A. Land classifications technically are not withdrawals (Associate Solicitor's memorandum of August 19, 1980), and are subject to the review provisions of Section 202(d) rather than 204(1) of FLPMA. Organic Act Directive (OAD) No. 78-49 of July 19, 1978, which held otherwise, is being cancelled. However, because certain classifications segregate lands from operation of some or all of the public land laws, including at times mining, they are considered to be in the category of "de facto withdrawals" — to be systematically reviewed as part of the Bureau's overall withdrawal review program.

B. OAD No. 81-4 of March 2, 1981, set no accelerated target dates for completing a review of classification orders. Rather, such was to be accomplished by Fiscal Year 1992. Continuing emphasis upon elimination of public land "lock-ups," however, now makes it clear that the 1992 date was unrealistic, and that the Bureau must complete most, if not all, of its classification review in a much shorter period. Recent budget proposals call for essential completion by the end of FY-83, and State Offices should plan accordingly.

C. Classifications created under the expired Classification and Multiple Use Act (C&MU) close substantial public land areas to varying ranges of public use. Some of these classifications are no longer appropriate, or restrict activities which should be subject to the discretion of the land manager. The Bureau will effect a determined effort to cancel a large percentage of these classifications so that a full range of uses can be considered — on a case-by-case basis -- predicated upon the principles of multiple-use planning. The following review and cancellation criteria apply:

1. General Criteria.

   a. The goal is elimination, as rapidly as practicable, of all C&MU classifications. Whenever possible review of such classifications should be integrated with land use planning for an area.

Source: BLM, 1981

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APPENDIX 1.8: SUMMARY OF ALLOTMENTS BY CATEGORY

"M" Category

Allotment Number	Allotment Name	Preference Code	Management Status	Livestock No.	Livestock Class	Season of Use	AUMs BLM	AUMs Other	Acres BLM	Acres Other	Range Condition % Good and Excellent
4003	Stateline	3			S	04/20-06/05					
					C	04/25-11/21	2,127		21,738	18,191 (private) 1,983 (state)	52
4110	Crooked Creek	3		3	C	03/01-02/28	32		320	160	
4111	Paradise	3	AMP	159	C	04/20-06/19					
				159	C	10/01-02/20	226		1,308	2,144 (private)	9
4113	Bowler	3	AMP	472	C	04/15-12/14	874		8,274	6,355 (private) 640 (state)	42
4114	Crow	3	AMP	120	C	03/01-10/30	161		1,407	1,861 (private)	43
4118	Lower Sage Creek	3		200	C	12/01-01/15	110		1,088		
4119	Cherry Creek	3		152	C	05/01-11/30	308		2,311	6,801 (private)	64
4120	Lower Bluewater	3		95	C	03/01-10/31	76	711	100	1,276 (private) 40 (state)	0
4126	Deadman	3		200	C	04/24-10/20					
				20	H	06/01-08/31	250		1,338		
4129	Pfeifer Ind.	3		50	C	05/15-09/15	92		744	900 (private)	77
4131	Black Butte	3		75	C	05/01-06/30					
				75	C	10/01-11/15	275		2,144	3,807 (private)	80
4132	Limestone	3		9	C	03/01-02/28	107		904	831 (private)	18
4133	Railroad	3		16	C	03/01-02/28	196		1,992	4,184 (private) 640 (state)	32
4134	Crooked Creek	3		1	C	03/01-09/30	7		720		
4135	Lewis	3		1	C	03/01-02/28	12		40		
4136	Piney Creek	3		2	C	03/01-02/28	28		269	113 (private)	92
4903	Milton Ind.	3		153	C	05/15-11/15	915		3,055	1,611 (private) 640 (state)	100
4905	Individual	3		8	C	03/01-02/28	97		480		
4906	Wilckens Ind.	3			C	03/01-02/28	313		1,298		
4907	Johnke Ind.	3		125	C	05/20-12/15	528		2,487	1,924 (private)	86
4908	Adolph Ind.	3		5	C	03/01-02/28	62		160		allotment unclassified
4918	Griffith Ind.	3		66	C	03/01-02/28	566		1,261	781 (private)	100
4919	Johnson Ind.	3		131	C	03/01-02/28	375		*1,199	662 (state)	*100
4920	Lind Ind.	3		26	C	10/01-02/28	133		1,120		
4921	Wacker Ind. (Sage Hen)	3	AMP	106	C	05/01-10/31	278		988	425 (private)	79
4922	Wacker Ind.	3		9	C	03/01-02/28	102		317		
4923		3		31	C	03/01-02/28	364		962		100
4924	P. Goffena Ind.	3		24	C	03/01-02/28	287		1,280		
4926	R. Goffena Ind.	3		25	C	03/01-02/28	304		1,021		
4927	Pelan Ind.	3		3	C	03/01-02/28	36		160		
4928	Lackey Ind. (Wacker)	3		23	C	03/01-02/28	271		995		
4929	Jackson Ind.	3		14	C	03/01-02/28	162		600		
4930	Sudan Ranch	3		4	C	03/01-02/28	45		200		
4931	Anderson Ind.	3		18	C	03/01-02/28	211		720		
4932	Corgiat Ind.	3		7	C	05/15-10/14	37		160		
4933	Cruikshank Ind.	3		6	C	03/01-02/28	74		320		
4934	Eliasson Ind.	3		43	C	03/01-02/28	516		2,073		
4935	Ellis Ind.	3		19	C	03/01-02/28	230		800		
4936	Raths Ind.	3		19	C	07/01-10/15	69		680		
4937	Harmun Ind.	3		18	C	03/01-02/28	210		640		28
4938	Ellis Ind.	3		3	C	03/01-02/28	39		160		
4939	Jarreit Ind.	3		27	C		315		*1,250	722 (private) 640 (state)	*100
4941	Lake Mason GA	3	AMP		C	05/15-11/14	1,215		*3,949	799 (private) 639 (state)	*87
4942	Parrott Ind.	3		1	C	03/01-02/28	12		40		
4943	Mehling Ind.	3		41	C	03/01-02/28	489		*639		*100
4944	Neshiem Ind.	3		4	C	03/01-02/28	47		160		
4949	Iverson Ind.	3		260	C	05/15-12/15	1,298		4,867	985 (private) 1,011 (state)	79
4950	Alexander A & B	3		1	C	03/01-02/28					
				50	C	05/01-09/30	259		*348		*100
4951	Vescovi Ind.	3		49	C	03/01-02/28					
				1	C	03/01-08/31	595		*2,204	*158 (private)	*96
4952	Individual	3		7	C	05/01-10/31	41		160		
4953	Parrott Ind. B	3		14	C	03/01-02/28	164		637		
4968	Milton Ind.	3			C	03/01-02/28					
					S	03/01-02/28	369		1,278	*633 (private)	55
4970	Dybvik Ind.	3		39	C	06/15-09/30	137		640		
4972	Graves Ind.	3			C	03/01-02/28					
					S	03/01-02/28	1,626		5,776		
4973	Pearce/Shipp	3		6	C	03/01-02/28	64		160		
4974	Harris Ind.	3		150	C	03/01-05/15					
				150	C	11/16-02/28	401		1,180		
4975	Hockmuth Ind.	3		24	C	03/01-02/28	288		800		
4976	Jasbeck Ind.	3		5	C	03/01-02/28					
				25	S	03/01-02/28	114		320		
4978	Kombol Ind.	3		1	C	03/01-02/28	12		40		
4979	Mang Ind.	3	AMP	112	C	05/15-09/30	245		638		100
4980	Oset Ind.	3		10	C	03/01-02/28	125		320		

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"M" Category

Allotment Number	Allotment Name	Preference Code	Management Status	Livestock No.	Livestock Class	Season of Use	AUMs BLM	AUMs Other	Acres BLM	Acres Other	Range Condition % Good and Excellent
4981	Pronghorn Ranch	3			C	03/01-02/28	1,356		*6,054	3,518 (private) 1,272 (state)	
4982		3		8	C	03/01-02/28	96		320		
4983	DeVries Ind.	3		18	C	04/15-11/15	127		481		
				42	C	04/15-11/15	313		822		
4984	Wacker Ind.	3		153	C	05/01-11/30	257		664		
4985	Zimmerman Ind.	3		4	C	03/01-02/28	50		160		
4988	Stanley AMP	3	AMP	184	C	05/05-10/05	734		2,981	10 (private) 800 (state)	97
4991	Lower Musselshell	3		14	C	03/01-02/28	169		847		
4995	L. Goffena Ind.	3		5	C	03/01-02/28	55		240		
5204	Dry Creek Common	3			C	03/01-02/28	108	1,086	1,400	7,110	
5205	Individual	3		1	C	03/01-07/31	5		32		
5209	Individual	3		11	C	03/01-02/28	139		1,195		
5213	Cottonwood	3	AMP			05/01-11/15	733		14,172	6,445 (private) 1,015 (state)	89
5214	Wade	3		650	S	04/25-06/15					
				650	S	10/15-12/15	151		2,150	1,692 (private) 551 (state)	99
5217	Jack Creek	3	AMP		S	Under AMP					
					C	Under AMP	536		8,329	69 (private) 1,279 (state)	87
5220	H.D. Bischoff	15		2	C	03/01-02/28	16		80		
5221	Individual	3		5	C	03/01-02/28	68		598		
5225	Grove Creek	3	AMP	322	C	03/01-02/28	1,295		9,173	14,334 (private) 1,000 (state)	56
5229	Individual	3		5	C	03/01-02/28	56		332		27
5232	Deer Mountain	3		20	C	05/01-10/31	120		932	125 (private)	87
5233	Home Pasture	3		4	C	03/01-02/28	52		255		
5235	Hollenbeck	3		80	C	04/01-09/30	425		6,399	235 (private) 620 (state)	89
5300	Upper Buffalo Com.	3			C	03/01-02/28	411		*1,907	195 (private)	*76
5301	Ralph Botts Area	3		8	C	03/01-02/28	106		800		
5302	Burk Common	3	AMP		C	05/01-11/30	389		1,959	952 (private) 639 (state)	82
5304	South Pompey	3	AMP	70	C	05/01-10/31	391		3,002	1,022 (private)	96
5305	Lehman Ind.	3		15	C	03/01-02/28	183		1,280		
5307	Mill Creek Common	3			C	04/01-11/30	127		960		
5308	Individual	3		11	C	03/01-02/28	132		640		
5312	Central K Henry	3	AMP	48	C	06/01-10/31	241		659	1,037 (private) 131 (state)	100
5314	McCormick Springs	3		23	C	03/01-02/28	278		4,003		
5315	Eddleman Exchange of Use (E/U)	3		44	C	03/01-02/28		E/U			
5316	Buffalo Creek	3	AMP	176	C	03/01-02/28	449		5,861	16,164 (private) 2,659 (state)	98
5318	North Otis	3	AMP		C	05/15-10/15	175		1,352	794 (private)	91
5319	East Pasture	3		25	C	05/01-08/31	42				
5322	Johnson Ind.	3		8	C	03/01-02/28	105		318		
5323	Keller Ind.	3		3	C	03/01-02/28	38		179		
5325	Hudson Ind.	3		3	C	03/01-02/28		E/U			
5326	Lambrecht Ind.	3		6	C	03/01-02/28	69		480		
5331	Individual	3		20	C	03/01-02/28	249		1,733		
5332	Meredith Ind.	3		66	C	04/01-06/20					
				32	C	11/01-11/30	231		840		
5333	Individual	3		31	C	06/01-11/30	183				
5336	North K Henry	3		16	C	03/01-02/28		E/U			
5337	Grasshaven	3				03/01-02/28	681		1,120		
5338	Fisher Pasture	3		14	C	03/01-02/28	166		1,033		
5339	System Ranch	3		9	C	03/01-02/28	104		1,528		
5340	Individual	3		8	C	03/01-02/28	92		1,120		
5341	Shelhammer Ind.	3		8	C	03/01-02/28	177		1,076		
5342	Plotts & Swanson	3		1	C	03/01-02/28	15		80		
5343	Pompeys Pillar Cr.	3		17	C	03/01-02/28		E/U	1,140		
5344	South Otis	3		4	C	03/01-02/28	45		320		
5345	Shelhammer 30 Mile	3		7	C	03/01-02/28	80		1,465		
5346	Robert Ind.	3		4	C	03/01-02/28	50		320		
5348	Hawk Creek	3	AMP		C	04/16-09/30	433		2,248		44
5350	Welborn Ind.	3		77	C	11/01-02/28	273		*1,854	2,764 (private) 329 (state)	*100
5352	Roen Ind.	3		8	C	04/07-11/06	56				
5355	John Brown Ind.	3		30	C	03/01-02/28	348		1,760		
5358	Individual	3		17	C	03/01-02/28	207		1,280		
5360	Wegner Indep.	3		19	C	03/01-02/28	224		1,160		
5361	Propp Ind.	3		4	C	03/01-02/28	50		320		
5362	East End Common	3			C	03/01-02/28	785				
5363	Individual	3		4	C	03/01-02/28	53		320		
5366	Turley Pasture	3		2	C	03/01-02/28	21		140		
5368	Home Pasture	3		147	C	12/01-03/31	60		747	994 (private)	100
5369	Section 19 Pasture	3		20	C	04/01-06/15					
				7	H	04/01-11/30	91		622	155 (private)	90

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"M" Category

Allotment Number	Allotment Name	Preference Code	Management Status	Livestock No.	Livestock Class	Season of Use	AUMs BLM	AUMs Other	Acres BLM	Acres Other	Range Condition % Good and Excellent
5370	Pickett Spr. Past.	3		29	C	03/01-02/28	343		*2,517		*
5372	Mill Creek Allot.	3		14	C	05/20-10/30	75		640		61
5373	Hanson Springs	3			C	04/07-11/30	519		1,419	1,519 (private)	81
5375	Individual	3		4	C	05/15-11/15		E/U	68		
5377	North Pompey	3		5	C	03/01-09/30	34		233		
5378	Propp Independent	3		18	C	03/01-02/28	213		957	958 (private) 601 (state)	96
5379	T Hanging Heart	3		9	C	03/01-02/28	103		686		
5380	Bow Tie Ind.	3		14	C	03/01-02/28	167		1,112		
5381	R. Brown Sons Ind.	3						E/U	1,827	320 (private)	81
5453	Keebler	15		10	C	09/01-01/31	49		215		
5464	South Fork	15	USFS AMP	20	C	07/01-10/15	70		160		
5505	Nature Conservancy	15		24	C	07/01-08/01	24		120		
5532	E.J. & Vera Roberts	15		4	C	03/01-02/28	42		107		
5565	Blair Ind.	3		6	C	05/01-06/01	6		25		
9648	Adams Ind.	15		1	C	03/01-02/28	7		40		
9654	Anderson Ind.	15		1	C	03/01-02/28	13		40		
9661	Bedford	15		12	C	03/01-02/28	152		479		
9682	Con Coal Co.	15		1	C	03/01-02/28	13		80		
9685	W. Crawford	15		1	C	03/01-02/28	13		40		
9689	B.H. Davis	15		8	C	03/01-02/28	90		320		
9712	Foster Ind.	15		14	C	10/15-02/28	62		200		
9718	Godfrey	15		1	C	03/01-02/28	20		80		
9719	Goffena L & L Co.	15		8	C	03/01-02/28	98		320		
9720	W. & B. Goffena	15		1	C	03/01-02/28	7		40		
9730	Hillman Ind.	15		2	C	03/01-02/28	29		80		
9740	Jennaway Ind.	15		1	C	03/01-02/28	13		65		
9744		15		10	C	03/01-02/28	121		520		
9772	Martinsdale Ind.	15		6	C	03/01-02/28	80		200		
9789	Nyquist Ind.	15		1	C	03/01-02/28	8		31		
9791	Jackson Ind.	3		28	C	03/01-02/28	340		1,042		
9824	Steffans Ind.	15		3	C	05/01-09/30	15		80		
							*37,335		210,224		

156 "M" Allotments

* Acreage figures and percentages reflect only those portions within the allotment that were inventoried.

"I" Category

1083	Clarks Fork	3							1,676	986 (state)	47
4101	Dryhead	3	AMP			Under AMP		982 (NPS)		11,302 (NPS) 134 (private) 70 (state)	1
4125	Upper Sage Creek	3		15	C	05/01-09/30	76		469	627 (private)	0
4137	Marie Allen	3		20	C	04/16-05/20		20 (NPS)		898 (NPS)	0
4940	Johnson Ind.	3		35	C	04/01-12/31	312		1,399	320 (private)	11
4945	Newton Ind.	3		110	C	05/01-11/30	531		1,963	499 (private)	37
4946	Ordracek Ind.	3		25	C	03/01-02/28					
				40	C	04/10-07/05					
				75	C	10/01-02/15	681		*3,086	1,809 (private)	*58
4947	Raths Ind.	3		1	C	03/01-02/28					
				750	C	03/01-05/31					
				741	C	10/16-02/28					
				28	C	04/01-12/31	1,825		*5,742	6,178 (private) 644 (state)	*68
4948	Kee Ind.	3		15	C	03/01-02/28					
				65	C	05/01-11/15	509		1,579	184 (private)	79
4954	Newton (Rath)	3		104	C	11/01-01/01	208		842		3
4969	Adolph	3			C	03/01-02/28	264		960		70
4971	Devils Basin Unit	3			C	03/01-02/28	2,142		*7,937	2,486 (private) 408 (state)	*65
5202	Cub Creek	3	AMP		C	05/01-01/15	1,505		16,759	8,063 (private) 1,020 (state)	47
5203	Bischoff	3			C	06/15-09/30	1,098		9,188	14,990 (private) 1,455 (state)	39
5210	Williams Basin	3	AMP		C	05/15-11/16	997		10,235	966 (private) 638 (state)	44
5224	South Dry Creek	3			C	02/01-04/30	90		1,472	864 (private)	41
5311	Southwest End	3	AMP	45	C	05/01-10/31	455	98	2,489	276 (private) 615 (state)	40
5320	Steamboat Butte	3			C	05/01-08/31	278		1,798	399 (private)	89
5321	South K Henry	3	AMP	75	C	05/01-09/30	164	82	2,366	1,013 (private)	83
5356	Hibbard Creek	3	AMP	82	C	03/01-12/31	692	112	3,335	4 (private) 639 (state)	60

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"I" Category

Allotment Number	Allotment Name	Preference Code	Management Status	Livestock No.	Livestock Class	Season of Use	AUMs BLM	AUMs Other	Acres BLM	Acres Other	Range Condition % Good and Excellent
5367	Heifer Pasture	3		42	C	03/01-07/31	208		*1,227	23 (state)	*61
5371	James Pasture	3		14	C	03/01-02/28	169		957	640 (state)	65
							12,218	BLM (includes 14 AUMs nonuse)	75,479	BLM	
							1,002	NPS	12,200	NPS	
							*13,220		87,679		

* Acreage figures and percentages reflect only those portions within the allotment that were inventoried.

"C" Category

Allotment Number	Allotment Name	Preference Code	Management Status	Livestock No.	Livestock Class	Season of Use	AUMs BLM	AUMs Other	Acres BLM	Acres Other	Range Condition % Good and Excellent
1005	Gravelly	3		200	C	05/07-05/21	60		4,010	105 (private) 640 (state)	1
1011	Petroglyph	3		406	C	05/07-05/21	140		2,778	732 (state)	8
4100	North Fork	3		4	C	03/01-02/28	48		230		
4103	Individual	3		2	C	04/01-02/28	24		80		
4104	Upper Bluewater	3		5	C	03/01-02/28	63		540		
4105	Gyp Springs	3	AMP		C	04/15-06/30 10/01-11/15	1,133		25,717	47 (private) 1,004 (state)	45
4106	Individual	3		3	C	03/01-02/28	36		200		
4107	Middle Fork 5 Mile	3		4	C	05/15-10/30	20		120		
4108	Individual	3		1	C	05/15-10/30	5		20		
4109	East Bluewater	3		65	C	06/01-12/01	117	* does not include 92 nonuse	880		
4112	Individual	3		4	C	03/01-12/31	40		520		
4115	Bluewash	3	AMP		C C	04/01-06/30 09/15-11/03	1,739		16,836	3,230 (private) 1,154 (state)	27
4116	Individual	3		8	C	03/01-02/28	94		320		
4117	Individual	3		1	C	05/15-10/30	5		20		
4121	Five Mile Creek	3		2	C	05/15-10/30	10		40		
4122	Individual	3		24	C	05/15-10/30	132		520		
4123	Individual	3		3	C	05/15-10/30	16		80		
4127	Bridger Creek	3		3	C	03/01-02/28	32		320		
4128	Individual	3		3	C	03/01-02/28	37	66	240	1,160	
4904	Goffena Ind.	3		2	C	03/01-02/28	28		120		
4911	Goffena	3		17	C	03/01-02/28	195		640		
4912	Careless	3		10	C	03/01-02/28	120		600		
4913	Jensen Ind.	3		3	C	03/01-02/28	31		187		
4914	Lehfeldt Ind.	3		2	C	03/01-02/28	17		80		
4915	Mashino Ind.	3		5	S	03/01-02/28	12		80		
4916	Mercer Ind.	3		1	C	03/01-02/28	9		40		
4917	Individual	3		4	C	03/01-02/28	48		200		
4986	Bohlman	3		1	C	03/01-11/30	9		40		
4987	Brillhart Ind.	3		1	C	03/01-02/28	9		40		
4989	DeJaegher Ind.	3		16	C	03/01-02/28	193		1,011		
4993	Goffena	3		7	C	03/01-02/28	80		360		
4994	J. Goffena Ind.	3		8	C	03/01-02/28	102		520		
4996	Goffena Ind.	3		8	C	03/01-02/28	94		480		
4997	R. Goffena Ind.	3		2	C	03/01-02/28	22		120		
4998	W. Goffena Ind.	3		4	C	03/01-02/28	48		200		
4999	Harvey Ind.	3		1	C	03/01-02/28	4		40		
5000	H. & H. Ind.	3		5	C	03/01-02/28	62		239		
5002	Highland Ind.	3		9	C	03/01-02/28	110		512		
5004	Hougen Ind.	3		2	C	03/01-02/28	24		80		
5006	Kincheloe Corp. Ind.	3		4	C	03/01-02/28	48		240		
5008	Mack Ind.	3		2	C	03/01-02/28	17		160		
5012	Stensvad Inc. Ind.	3		3	C	03/01-02/28	36		160		
5020	Hougen Ind.	3		12	C	03/01-02/28	150		640		
5200	Individual	3		4	C	03/01-12/31	40	170	160	600	
5201	Individual	3		1	C	05/01-11/30	7	253	40	1,010	
5206	Individual	3		22	S	06/01-10/15	20	60	200	160	
5207	Anderson Ind.	3		1	H	03/01-10/31	7	24	80	400	
5208	Individual	3		11	C	03/01-02/28	132	612	720	2,920	
5212	Individual	3		1	C	03/01-10/31	13		40		
5215	Hill	3		5	C	03/01-02/28	60		480		
5219	Individual	3		10	S	03/01-02/28	24		200		
5222	Keyser Creek Co.	15		2	C	03/01-02/28	16		80		
5223	Individual	3		1	C	03/01-02/28	12	43	200	480	
5228	Individual	3		5	C	05/01-10/31	30	6	240	160	
5231	Individual	3		17	S	03/01-02/22	40		160		
5306	Kinmonth	3		12	C	03/01-02/28	148				
	Kinmonth			7	C	06/01-09/30	28	95	1,440	640	
5309	Individual	3		12	C	03/01-02/28	144		720		
5310	Keller Common	3		1	C	03/01-10/31	8				
	Keller Common	3		35	C	03/01-02/28	420		580		
5324	Kembel Ind.	3		2	C	03/01-02/28	15		80		
5329	Individual	3		2	C	03/01-02/28	16		160		
5330	Bull Mountain Ind.	3		2	C	03/01-02/28	24		184		

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"C" Category

Allotment Number	Allotment Name	Preference Code	Management Status	Livestock No.	Livestock Class	Season of Use	AUMs BLM	AUMs Other	Acres BLM	Acres Other	Range Condition % Good and Excellent
5335	Sando Ind.	3		3	C	03/01-02/28	36		320		
5347	Van Driest Ind.	3		6	C	03/01-02/28	72		320		
5349	Wegner Ind.	3		2	C	03/01-02/28	16		136		
5353	Rudi Spring	3		15	C	03/01-02/28	177		1,258		
5354	Ballek Ind.	3		2	C	03/01-02/28	21		40		
5357	Cossitt Ind.	3		8	C	03/01-03/31	8		37		
5359	Individual	3		2	C	03/01-02/28	24		125		
5364	Bellas Pasture	3		1	C	03/01-02/28	14		80		
5374	Individual	3		1	C	03/01-09/30	7		40		
5376	Individual	3		8	C	04/01-11/30		E/U	360		
5403	Harold Arthur	15		2	C	03/01-02/28	17		80		
5404	Harry Arthur	15		1	C	03/01-02/28	10		40		
5405	Daniel Arthur	15		2	C	03/01-02/28	30		132		
5407	Bainler Ind.	15		3	C	06/01-10/15	12		80		
5408	Arthur Beley	15		1	C	03/01-02/28	9		38		
5409	Cremer Rodeo Land	15		19	C	03/01-02/28	222		1,152		
5414	Boe Ranch Co.	15		7	C	03/01-02/28	75		388		
5416	L & I Braughton	15		2	C	03/01-02/28	23		80		
5417	A.C. Brumfield	15		2	C	03/01-02/28	16		80		
5418	Herbert Bue	15		2	C	03/01-02/28	22		120		
5419	Donald Todd	15		2	C	03/01-02/28	24		120		
5424	Gerald Connolly	15		1	C	03/01-02/28	12		78		
5426	Beartooth Hereford	15		2	C	03/01-02/28	15		97		
5427	Frank Cosgriff	15		2	C	03/01-02/28	24		119		
5432	Arnold Dinsdale	15		1	C	03/01-02/28	10		40		
5434	Marlyn Drange	15		5	C	03/01-02/28	50		160		
5435	David Duffy	15		2	C	03/01-02/28	15		80		
5437	T.M. Burkholder	15		5	C	03/01-02/28	60		308		
5438	Ellison Ind.	15		2	C	03/01-02/28	13		40		
5439	Engle Ranch Inc.	15		2	C	03/01-02/28	24		360		
5440	Paul Raymond Esp.	15		1	C	03/01-02/28	10		60		
5441	W. & H.M. Ewan	15		1	C	03/01-02/28	8		40		
5444	June Kalberg	15		3	C	03/01-02/28	29		120		
5446	Thomas Flanagan	15		1	C	03/01-02/28	8		40		
5449	Sidney Frazer	15		1	C	03/01-02/28	10		40		
5451	Glenn Golden	15		6	C	03/01-02/28	62		414		
5454	Grewell	15		5	C	03/01-02/28	60		440		
5455	J.B. Grierson Co.	15		10	C	03/01-02/28	120		640		
5456	J.B. Grierson Co.	15		12	C	03/01-02/01	134		719		
5457	Lewis Grosfield	15		6	C	03/01-02/28	71		280		
5458	E. Gullicksen Est.	15		3	C	03/01-02/28	30		120		
5459	Hailstone Ranch	15		2	C	03/01-02/28	16		81		
5460	Hay Meadow Ranches	15		1	C	03/01-02/28	17		80		
5461	Cedar Creek	15		3	C	03/01-02/28	25		480		
5463	Hathaway	15		1	C	03/01-02/28	12		80		
5466	Paul E. Hedrick	15		6	C	03/01-02/28	72		826		
5467	Curtin Ind.	15		2	H	03/01-02/28	14		40		
5468	Fred Horst	15		1	C	03/01-02/28	10		40		
5470	Norris Johnson	15		3	C	03/01-02/28	36		160		
5471	Lyle Jones	15		10	C	03/01-02/28	120		674		
5473	Leo & Vernie Kamp	15		1	C	03/01-02/28	8		40		
5474	H.A. & B.C. Keebler	15		14	C	03/01-02/28	163		533		
5476	Vernon Keller	15		2	C	03/01-02/28	20		160		
5477	Keewaydin Ranch	15		10	C	03/01-02/28	114		640		
5478	Gerald Kirch	15		2	C	03/01-02/28	15		40		
5480	John Krivtz	15		1	C	03/01-02/28	5		40		
5481	Henry Krug	15		1	C	03/01-02/28	8		40		
5483	James Cary	15		1	C	03/01-02/28	8		59		
5484	William Langford	15		2	C	03/01-02/28	18		54		
5485	Holden Individual	15		2	C	03/01-02/28	29		160		
5486	Cain Ranch	15		1	C	03/01-02/28	9		40		
5488	Line Inc.	15		6	C	03/01-02/28	70		481		
5490	Harry & Alice Line	15		10	C	03/01-02/28	103		567		
5491	Joseph Ortiz	15		1	C	03/01-02/28	8		40		
5492	C.L. Marshall Ind.	15		23	C	03/01-02/28	266		1,197		
5495	Ray Mickels	15		5	C	03/01-02/28	60		360		
5498	Meigs/Hash	15		2	C	03/01-02/28	24		240		
5500	Kathryn M. Morgan	15		2	C	03/01-02/28	18		81		
5501	Montroy Ranch Ind.	15		1	H	03/01-02/28	14		560		
5502	Douglas Mothershead	15		2	C	03/01-02/28	22		160		
5503	Glen Mothershead	15		5	C	03/01-02/28	59		330		
5504	T.P. Mulvihill	15		1	C	03/01-02/28	8		87		
5506	Terland Ind.	15		1	C	03/01-02/28	3		40		
5508	Milligan Creek	15		1	C	03/01-02/28	7		40		
5509	Gustov Norman	15		1	C	03/01-02/28	8		80		
5510	Alfred E. Ostrom	15		3	C	03/01-02/28	35		160		
5511	Hubert Ostrom	15		2	C	03/01-02/28	27		80		
5512	Jacob Ostrom	15		2	C	03/01-02/28	17		80		
5513	Robert Ostrom	15		3	C	03/01-02/28	32		160		

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"C" Category

Allotment Number	Allotment Name	Preference Code	Management Status	Livestock No.	Livestock Class	Season of Use	AUMs BLM	AUMs Other	Acres BLM	Acres Other	Range Condition % Good and Excellent
5515	Pearlie Lee & Co.	15		2	C	03/01-02/28	20		80		
5516	Pederson Land & Livestock	15		11	C	03/01-02/28	123		754		
5517	Southland Estates	15		15	C	03/01-02/28	180		1,040		
5520	Pierce Ranches Inc.	15		10	C	03/01-02/28	120		607		
5522	Clarence & A. Pile	15		14	C	03/01-02/28	165		1,003		
5523	D. & B. Pipkin	15		8	C	03/01-02/28	88		480		
5524	Plaggemeyer Ind.	15		3	C	03/01-02/28	34		160		
5525	W. & R. Plaggemeyer	15		1	C	03/01-02/28	9		40		
5528	Helen H. Reed	15		1	C	03/01-02/28	6		40		
5533	Clarence S. Rostad	15		3	C	03/01-02/28	28		72		
5534	Peter Rostad	15		5	C	03/01-02/28	58		360		
5535	Bruce Robinson	15		1	C	03/01-02/28	8		40		
5537	Ronald H. Sannes	15		1	C	03/01-02/28	7		40		
5540	J.K. & A. Scholten	15		1	C	03/01-02/28	13		40		
5541	7 L Bar Ranch Co.	15		2	C	03/01-02/28	20		160		
5542	Ray W. Severin	15		1	C	03/01-02/28	3		15		
5543	Smoot Ind.	15		11	C	03/01-02/28	128		345		
5544	Alfred G. Spaeth	15		2	C	03/01-02/28	20		160		
5545	O.S. & G.K. Stenberg	15		18	C	03/01-02/28	315		685		
5546	Joe Stene	15		2	C	03/01-02/28	16		80		
5548	G.A. Sternal	15		5	C	03/01-02/28	59		240		
5549	Jim Edwards	15		2	C	03/01-02/28	19		120		
5550	T. & F. Strobel	15		4	C	03/01-02/28	44		280		
5552	Telmar & A. Terland	15		13	C	03/01-02/28	149		662		
5553	Mitchell Thomas	15		1	C	03/01-02/28	20		79		
5554	Chris Thompson	15		1	C	03/01-02/28	7		40		
5555	Two River Ranch	15		6	C	03/01-02/28	66		306		
5556	Bernard J. Van Every	15		1	C	03/01-12/31	10		120		
5557	Barney A. Warp	15		2	C	03/01-02/28	14		240		
5558	Gerald Weast	15		6	C	03/01-02/28	62		320		
5559	Weppler Ranch Co.	15		2	C	03/01-02/28	19		141		
5560	Bruce Whithorn	15		2	C	03/01-02/28	24		120		
5561	A.E. Wilkens	15		2	C	03/01-02/28	16		200		
5562	Hubert-Woodard	15		4	C	03/01-02/28	46		240		
5566	Individual	3		1	C	03/01-02/28	8		40		
5567	Individual	3		5	C	03/01-07/31	24		40		
5568	Individual	3		1	C	05/15-09/15	5		40		
5569	Individual	3		2	C	03/01-02/28	24		80		
5570	Agnes O'Leary	15		1	C	03/01-02/28	8		40		
5571	Individual	3		1	C	03/01-12/31	10		80		
5572	Individual	3		8	C	03/01-02/28	97		640		
5573	Individual	3		3	C	03/01-02/28	36		110		
5580	Robert-Lee Olsen	15		20	S	03/01-02/28	39		280		
5581	Big Canyon	15		2	C	03/01-02/28	26		160		
5582	Keebler	15		1	C	03/01-02/28	10		40		
5585	W.J. Thompson	15		33	C	08/15-09/30	50		480		
5586	Richard Worm	15		1	C	03/01-02/28	8		40		
9650	American Fork Ind.	15		2	C	03/01-02/28	27		80		
9652	Anderson Ind.	15		1	C	03/01-02/28	14		40		
9667	Broderson	15		2	C	03/01-02/28	26		160		
9678	Casey	15		3	C	03/01-02/28	35		205		
9680	Charter Ranch Inc.	15		5	C	03/01-02/28	64		320		
9686	Cremer Ind.	15		1	C	03/01-02/28	6		40		
9694	Schenk Ind.	15		5	C	03/01-02/28	42		120		
9696	Vander Voort Ind.	15		2	C	03/01-02/28	30		117		
9702	Eliasson Ranch Co.	15		4	C	03/01-02/28	54		240		
9716	Gebhardt	15		4	C	03/01-02/28	52		320		
9734	Pelan Ind.	15		5	C	03/01-02/28	64		213		
9736	Hougardy Ind.	15		1	C	03/01-02/28	21		80		
9757	Shelhammer	15		13	C	03/01-02/28	166		1,199		
9762	Lode Ind.	15		5	C	03/01-02/28	64		240		
9765	Lyons	15		10	C	05/20-09/30	44		200		
9768	Mager Ind.	15		3	C	07/10-09/15	8		40		
9773	McCoughy Ind.	15		2	C	03/01-02/28	24		160		
9781	Muir Ind.	15		3	C	03/01-02/28	38		162		
9792	W. Olsen Ind.	15		1	C	03/01-02/28	10		38		
9805	Robertson Ind.	15		5	C	03/01-02/28	64		160		
9837	Mario Todaro	15		1	C	03/01-02/28	18		80		
9840	Tully Ind.	15		1	C	03/01-02/28	15		49		
0842	Vale Ind.	15		3	C	03/01-02/28	36		160		
0843	Van Driest Ind.	15		4	C	03/01-02/28	49		401		
0844	Akeis Ind.	15		9	C	03/01-02/28	54		240		
0845	McCann Ind.	15		9	C	03/01-02/28	102		320		
0850	Carey Gulch	15	USFS AWP		C	as per AWP	2		145		

Sources:

1. Range Management Automated System, BLM, 1982
2. Ecological Site Inventory, BLM, 1981

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APPENDIX 1.9: APPLICATION OF UNSUITABLILITY CRITERIA

Criterion #1: There are no deposits of federal coal which lie within the Federal Land Systems described in 43 CFR 3461.1(a)(1) (100% reliability).

Criterion #2: There is no federally-owned surface encumbered by rights-of-way or easements within the strippable coal area (100% reliability).

Criterion #3: Several miles of county maintained roads cross federal lands. These rights-of-way and the appropriate buffer zones are considered unsuitable; no exceptions were applied. Several occupied dwellings lie on federal land. These dwellings and appropriate buffer zones are considered unsuitable; no exceptions were applied (100% reliability).

Criterion #4: There are no deposits of strippable federal coal which lie within designated wilderness study areas (100% reliability).

Criterion #5: There are no federal lands within the coal field which have been designated by Visual Resource Management analysis as being Class I (100% reliability).

Criterion #6: There are no federal lands within the coal field which have been permitted for use for scientific study (100% reliability).

Criterion #7: Due to lack of adequate inventory, this criterion has not been applied (inadequate data).

Criterion #8: There are no designated or potential National Natural Landmarks within the coal field (100% reliability).

Criteria #9 - #15: Due to the lack of adequate inventory, these criteria were not applied.

Criterion #16: The USGS has identified several drainages which flow through federal lands, portions of which qualify as special floodplains. These areas are considered unsuitable; no exceptions were applied (100% reliability).

Criterion #17: There are no federal lands which have been committed for use as municipal watersheds (100% reliability).

Criterion #18: There are no National Resource Waters within the coal field (100% reliability).

Criterion #19: The BLM has identified several miles of preliminary Alluvial Valley Floors. These areas are identified on Figure 3.___. These areas will not be considered unsuitable until a final determination is made by the Office of Surface Management and the State of Montana (date preliminary).

Criterion #20: No state proposed criteria have been developed and adopted by the Secretary.

Unsuitability criteria were only applied to federal lands within the Bull Mountain Field. Federal coal in other fields may only be developed through underground mining methods. The criteria will only be applied in these fields after receipt of a mining plan application which details the location of proposed surface operations and facilities.

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APPENDIX 1.10: METHODOLOGY FOR MITIGATING IMPACTS TO CULTURAL RESOURCES

The BLM recognizes that some of the proposals in various programs could affect cultural resources. Because of this fact, the BLM conducts intensive field (Class III) inventories of specific areas that could be impacted prior to an undertaking. If cultural resources are found, every effort is made to avoid them. However, where this is not possible, BLM consults with the SHPO and the Advisory Council on Historic Preservation (ACHP) in accordance with the National Historic Preservation Act 1966, as amended 1980, and attendant 36 CFR 60 and 36 CFR 800 Regulations.

Mitigation of impacts to cultural resources may entail building removal, fencing off, burying as a form of preservation, or excavation. The costs of these measures could range from approximately $2,000 per site to as much as $100,000 for a large and complex buried prehistoric site. Sites requiring extensive study would probably cause a project to cost too much in relation to the benefits it might bring. In effect, the impacts would be eliminated by deleting the project. Perhaps 95% of these sites would not have mitigation costs above $10,000 per site, however.

Methodology for Implementing Off-Road Vehicle Restrictions

Off-road vehicle closures will be accomplished in accordance with BLM Manual 8340 - Off-Road Vehicle Management. This manual is on file in the Billings Resource Area Office.

Methodology Used to Determine Impacts to Visual Resources

Impacts to visual quality are determined through analysis of allowable management actions within the five visual management classes as they are defined in Bureau Manual 8400. Projects are analyzed in terms of their potential to create the following types of effects:

A. Ground disturbance, including roads and trails constructed for access and/or maintenance of the project.

B. Creation of structures not homogenous to the visual scene.

C. Color changes which may occur from vegetative manipulations. This could be either removal of native vegetation or the introduction of additional non-native vegetation.

D. Livestock concentration around reservoirs and other water sources and associated grazing impacts of compaction, trailing and erosion.

E. Grazing systems and the associated fence and the fencing contracts.

Each type of impact is evaluated as to whether or not it would create a high, moderate or low contrast if it were done in each one of the four visual class landscapes. High contrasts would be created by those landscape changes that demand attention. They could not be overlooked. The contrast would be inharmonious to the basic scenery elements of line, form, color and texture. High contrast projects could not meet management class objectives without mitigation.

Moderate contrasts would attract attention and dominate the landscape. A project that would create a moderate contrast could only meet Class III and IV management objectives without mitigation.

Low contrasts might or might not dominate the scene, but because of the quality of the scenery or the size and scope of the project, it would meet all of the management class objectives.

This anlaysis assumes that the projects would be viewed from the foreground (up to one mile). The impacts to visual class would be rated at the time of the projects if no special mitigating measures are applied. Over time, nature might mitigate the impacts through revegetation. Also, standard operating procedures would allow many projects to be accomplished within allowable visual class guidelines.

Source: BLM, 1982

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APPENDIX 2.1: COST CALCULATIONS OF RANGE IMPROVEMENTS AND VEGETATION MANIPULATIONS

Figures are based on average cost of similar project or treatment for this region.

		Continuation of Existing Management		Low Level Management Alternative		High Level Management Alternative		Preferred Level Management Alternative	
Project or Method	Average Cost	# of Units	Total Cost	# of Units	Total Cost	# of Units	Total Cost	# of Units	Total Cost
Reservoir	$ 6,000 ea.	4	$ 24,000	-	$0	16	$ 96,000	16	$ 96,000
Well	7,000 ea.	9	63,000	-	0	10	70,000	10	70,000
Fence	2,000 mi.	13	26,000	-	0	46	92,000	46	92,000
Spring	2,500 ea.	-	-	-	0	2	5,000	2	5,000
Pipeline	1,500 mi.	21	31,500	-	0	31	46,500	31	46,500
*Catchment	8,500 ea.	19	161,500	-	0	47	399,500	47	399,500
Leafy Spurge Control		45	15,000	-	0	45	15,000	45	15,000
Sagebrush Burning	5 ac.	-	0	-	0	21,520	107,600	21,520	107,600
Disc and Chisel	20 ac.	-	0	-	0	1,700	34,000	1,700	34,000
Renovate Crested Wheat	25 ac.	-	0	-	0	5,205	130,125	5,205	130,125
Total Cost			$321,000		$0		$995,725		$995,725

* Current cost of catchments is about $15,000. The $8,500 figure is used because that is the estimated cost with improved design. If the larger figure is used this would add $123,500 to Alternative A and $305,500 to Alternatives C and D.

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APPENDIX 2.1: COST CALCULATIONS OF RANGE IMPROVEMENTS AND VEGETATION MANIPULATIONS (Continued, Page 2)

Cost Calculations of Range Improvements Within the PMWHR

		Continuation of Existing Management		Low Level Management Alternative		High Level Management Alternative		Preferred Level Management Alternative	
Project or Method	Average Cost	# of Units	Total Cost	# of Units	Total Cost	# of Units	Total Cost	# of Units	Total Cost
Water Catchments	$ 8,500 ea.	5	$ 42,500	0	$0	7-8	$ 59,500-68,000	5	$ 42,500
Fenceline	2,000 mi.	7	14,000	0	0	15-19 (mi.)	30,000-38,000	7	14,000
Total Cost			$ 56,500		$0		$ 89,500-$106,000		$ 56,500

Source: BLM, 1982

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APPENDIX 2.2: COST CALCULATIONS OF WILDLIFE HABITAT IMPROVEMENTS

		Continuation of Existing Management		Low Level Management Alternative		High Level Management Alternative		Preferred Level Management Alternative	
Project or Method	Average Cost	Units	Total Cost	Units	Total Cost	Units	Total Cost	Units	Total Cost
Water Catchment (guzzler)	$ 1,800/ea	12	$21,600	0		20	$ 36,000	5	$ 9,000
Island	500/ea	20	10,000	0		50	25,000	50	25,000
Raptor Nest Structure	50/ea	0	0	0		20	1,000	20	1,000
Fence a Reservoir	1,000/ea	7	7,000	0		7	7,000	7	7,000
Fence a Riparian Area (5 acres)	250	2	500	0		0	0	0	0
Seed 25 acres	500/ea	0	0	0		1	500	1	500
New Fish Reservoir	10,000/ea	0	0	0		3	30,000	3	30,000
Alternative Watering devices (i.e. tanks and pipelines below reservoirs)	1,000/ea	3	3,000	0		3	3,000	3	3,000
Totals			42,100				102,500		75,500

Source: BLM, 1982

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APPENDIX 2.3: SURFACE COAL MINE SCENARIO

For analysis purposes, it is anticipated that in mid-1982 a 300,000 ton per year surface mine would be opened in the Mammoth-Rehder coal bed of the Bull Mountain Coal Field.

It is estimated that the mine would not reach its full production level until its fourth year of operation, 1995. During the first year and one-half, support facilities, access roads, and perhaps a rail spur would be constructed, disturbing approximately 60 acres. By 1994 the surface facilities will have been completed, and mining would begin. Approximately 11 acres will be disturbed to produce 150,000 tons of coal. In 1995 the mine will be at its full production level, 300,000 tons per year. Around 21 acres would be disturbed. This level of mining would continue throughout the life of the mine.

Reclamation of disturbed areas would begin as soon after mining as practicable, and continue in conjunction with the mining operation. The operator's bond would not be released until the land was satisfactorily reclaimed, probably 15 years after mining.

UNDERGROUND COAL MINE SCENARIO

It is anticipated that a small underground mine would be opened in the Joliet-Fromberg Field in 1985. Associated surface facilities would be constructed during the next two years disturbing perhaps 60 acres. By 1987, the mine will have begun production, at an estimated 30,000 tons that first year. In 1988, the mine will reach its full production level of 150,000 tons per year, which will be maintained throughout the life of the mine. Only small acreages will be disturbed during this period.

It is assumed that the produced coal would serve both domestic purposes and be used in coal-fired electricity generation.

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APPENDIX 2.4: APPLICATION OF UNSUITABILITY CRITERIA BULL MOUNTAIN COAL FIELD (20:1 Stripping Ratio)

Unsuitability Criterion	Acres Unsuitable	Tonnage (1)
#1 (See Appendix 1.4 for descriptions)	N/A	0
#2	N/A	0
#3	0 miles of road; 3 buildings; 24 acres	350,000
#4	N/A	0
#5	N/A	0
#6	N/A	0
#7	(2)	
#8	N/A	0
#9	(2)	
#10	(2)	
#11	(2)	
#12	(2)	
#13	(2)	
#14	(2)	
#15	(2)	
#16	2-1/2 miles: 96 acres	1,500,000
#17	N/A	0
#18	N/A	0
#19	5 miles: 298 acres	0 (3)
#20	N/A	0
Totals	120 acres	1,850,000 tons

Footnotes:

(1) Assume 11' of coal for Mammoth-Rehder; 8' of coal McCleary bed; 1,711 tons/acre foot.

(2) Criteria which have not been applied due to lack of available inventory.

(3) Final determination on Alluvial Valley Floors by State of Montana and Office of Surface Management not completed; no coal eliminated.

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APPENDIX 2.5: APPLICATION OF COAL UNSUITABILITY CRITERIA
(10:1 Stripping Ratio)

(1)	Acres Unsuitable	Tonnage
Criterion #1	N/A	0
#2	N/A	0
#3	2 occupied dwellings; 16 acres	240,000
#4	N/A	0
#5	N/A	0
#6	N/A	0
#7	(2)	
#8	N/A	0
#9	(2)	
#10	(2)	
#11	(2)	
#12	(2)	
#13	(2)	
#14	(2)	
#15	(2)	
#16	1.2 miles: 50 acres	750,000
#17	N/A	0
#18	N/A	0
#19	1.2 miles: 180 acres	0 (3)
#20	N/A	0
Totals	17 acres	1,000,000 tons

Footnotes:

(1) Assume 11' of coal for Mammoth-Rehder; 8' of coal McCleary bed; 1,711 tons/acre foot.

(2) Criteria which have not been applied due to lack of available inventory.

(3) Final determination on Alluvial Valley Floors by State of Montana and Office of Surface Management not completed; no coal eliminated.

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APPENDIX 2.6: AREAS SENSITIVE TO OIL AND GAS LEASING

#	AREA	LAND DESCRIPTION (TO SECTION ONLY)	RATIONALE
1	Steamboat Butte	T. 6 N., R. 29 E., Sec. 4-5, 7-9	Archeological Site Complex (ASC)
2	Shepherd Ah-Nei	T. 3 N., R. 28 E., Sec. 6 T. 4 N., R. 27 E., Sec. 24,25,36 T. 4 N., R. 28 E., Sec. 19,20,30,31	Recreation Site Environmental Education Site
3	Acton Area	T. 3 N., R. 25 E., Sec. 5-8,17,20	Recreation Site
4	Young's Point	T. 2 S., R. 22 E., Sec. 35 T. 3 S., R. 22 E., Sec. 3,4,5,8-10	Visual Resources Wildlife Habitat Cultural Resources
5	Bad Canyon	T. 4 S., R. 16 E., Sec. 4,6-10,14,15	Recreation Site Wildlife Habitat
6	Pryor Mountain Wild Horse Range	T. 8 S., R. 28 E. Sec. 4-9, 17-21 28-33 T. 9 S., R. 27 E. Sec. 1,2,11-14,23-25 T. 9 S., R. 28 E. Sec. 4-10,15-22,27-34 T. 58 N., R. 95 W. Sec. 19-23,26-29,33,34 (Wyoming)	Wilderness Wild Horses Wildlife Habitat Fragile Soils Recreation Sites Visual Resources
7	Crooked Creek Natural Area	T. 58 N., R. 95 W., Sec. 28 (within PMWHR)	Paleontologic Site National Natural Landmark (NNL)
8	Asparagus Point	T. 8 N., R. 27 E., Sec. 2	Recreation Site
9	Beartooth Face	BLM managed oil and gas estate within two miles of Beartooth Mountains	Visual Resources Seasonal Wildlife Habitat
10	Yellowstone River Area	Federally managed oil and gas estate within two miles of the river	Flowing Stream Wildlife Habitat Visual Resources
11	Weatherman's Draw	T. 8 S., R. 24 E., Sec. 20,28,29	Archaeological Site Complex (ASC)
12	Bridger Fossil Area	T. 7 S., R. 24 E., Sec. 17	Paleontologic Site National Natural Landmark
13	Red Dome	T. 7 S., R. 24 E., Sec. 19-21	Potential National Natural Landmark
14	Petroglyph Canyon	T. 9 S., R. 26 E., Sec. 35	Archeological Site Complex (ASC)
15	Red Valley	T. 9 S., R. 27 E., Sec. 21,28	Potential National Natural Landmark
16	Castle Butte	T. 5 N., R. 30 E., Sec. 34,35	Archeological Site Complex (ASC)

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Yellowstone County

Tract Number[1]	Legal Description[2]	Acres
31R	T. 1 N., R. 27 E. Sec. 8: Lots 3, 4	42.50
32R	T. 1 N., R. 27 E. Sec. 8: Lot 6	18.34
* 58R	T. 2 N., R. 26 E. Sec. 3: S1/2 Sec. 10: NE1/4	320 160 480
* 59R	T. 2 N., R. 26 E. Sec. 8: NE1/4	160
* 60R	T. 2 N., R. 26 E. Sec. 8: SW1/4	160
65D 65Fa[3]	T. 2 N., R. 26 E. Sec. 14: N1/2NE1/4	80
62D 62Fa	T. 3 N., R. 25 E. Sec. 26: NE1/4, E1/2SW1/4, N1/2SE1/4	320
33R	T. 3 N., R. 26 E. Sec. 4: All Sec. 8: W1/2, SE1/4 Sec. 9: All Sec. 10: W1/2	640 480 640 320 2,080
* 61R	T. 3 N., R. 26 E. Sec. 32: S1/2SE1/4	80
4D	T. 3 N., R. 27 E. Sec. 4: SW1/4	160
5D 5Ra	T. 3 N., R. 27 E. Sec. 14: NE1/4	160
6D 6Ra	T. 3 N., R. 27 E. Sec. 14: SW1/4	160
7D	T. 3 N., R. 27 E. Sec. 18: E1/2	320
8D	T. 3 N., R. 27 E. Sec. 24: S1/2SE1/4	80
* 62R	T. 3 N., R. 28 E. Sec. 2: E1/2NE1/4, NW1/4NE1/4, NE1/4NW1/4, SE1/4SW1/4, NE1/4SE1/4, S1/2SE1/4	120
* 63R	T. 3 N., R. 28 E. Sec. 4: NE1/4NE1/4	40
* 64R	T. 3 N., R. 28 E. Sec. 4: NW1/4NW1/4	40
* 65R	T. 3 N., R. 28 E. Sec. 10: N1/2	320
34R	T. 3 N., R. 28 E. Sec. 12: All T. 4 N., R. 28 E. Sec. 25: All T. 4 N., R. 29 E. Sec. 30: W1/2 Sec. 31: All T. 3 N., R. 29 E. Sec. 6: E1/2, NW1/4, N1/2SW1/4, SE1/4SW1/4 Sec. 7: All Sec. 18: All	640 640 320 640 600 640 640 4,120
* 66R	T. 3 N., R. 28 E. Sec. 14: SW1/4SW1/4	40
* 67R	T. 3 N., R. 28 E. Sec. 22: NE1/4	3.44

1/The letters following the tract numbers designate whether the tracts are in the disposal (D), retention (R), or further study (F) category.

2/Legal descriptions are arranged numerically by township, with north townships listed first, followed by south townships.

3/The letter "a" denotes those tracts that were changed to a different land tenure category following public comment.

*Tracts in the retention category identified as suitable for exchange.

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APPENDIX 2.7: LAND TENURE PROPOSAL TRACTS (Continued, Page 2)

Yellowstone County

Tract Number[1]	Legal Description[2]	Acres
35R	T. 3 N., R. 28 E.	
	Sec. 24: Lot 5 (NE1/4NE1/4)	40.21
1F	T. 3 N., R. 28 E.	
	Sec. 26: Lot 5	1.59
66D	T. 3 N., R. 29 E.	
	Sec. 2: SW1/4SW1/4	40
2F	T. 3 N., R. 29 E.	
	Sec. 20: Lot 5	3.44
36R	T. 3 N., R. 29 E.	
	Sec. 22: Lots 5, 6, 7, & 8	68.72
37R	T. 3 N., R. 29 E.	
	Sec. 24: Lots 5 & 6	4.45
38R	T. 3 N., R. 30 E.	
	Sec. 1: All	640
	Sec. 2: S1/2	320
	Sec. 12: N1/2	320
		1,280
3F	T. 3 N., R. 30 E.	
3Ra	Sec. 4: S1/2	320
4F	T. 3 N., R. 30 E.	
4Ra	Sec. 10: N1/2	320
39R	T. 3 N., R. 30 E.	
	Sec. 22: Lots 5, 6, 7, & 8	56.95
40R	T. 3 N., R. 31 E.	
	Sec. 4: Lot 21	9.93
41R	T. 4 N., R. 25 E.	
	Sec. 31: E1/2	320
	T. 3 N., R. 25 E.	
	Sec. 5: All	640
	Sec. 6: NE1/4	160
	Sec. 7: Lots 1 & 2, NE1/4, E1/2W1/2, SE1/4	548.70
	Sec. 8: All	640
	Sec. 9: All	640
	Sec. 17: All	640
	Sec. 20: N1/2N1/2	160
		3,748.70
42R	T. 4 N., R. 27 E.	
	Sec. 24: NE1/4, S1/2	480
	Sec. 25: All	640
	Sec. 36: All	640
	T. 4 N., R. 28 E.	
	Sec. 19: All	640
	Sec. 20: W1/2	320
	Sec. 30: Lots 1 & 2, N1/2NE1/4	150.19
	Sec. 31: All	640
	T. 3 N., R. 28 E.	
	Sec. 6: Lots 3, 4, 7, 8, 9, 10, 11, & 12, E1/2	572.88
		4,083.07
* 69R	T. 4 N., R. 28 E.	
	Sec. 26: W1/2	320
* 70R	T. 4 N., R. 28 E.	
	Sec. 34: E1/2	320
67D	T. 4 N., R. 29 E.	
	Sec. 24: W1/2	320
69D	T. 4 N., R. 29 E.	
69Fa	Sec. 28: S1/2	320
70D	T. 4 N., R. 29 E.	
70Fa	Sec. 34: SW1/4NE1/4, W1/2SW1/4, SE1/4SW1/4, SE1/4	320
5F	T. 4 N., R. 30 E.	
	Sec. 19: All	640
43R	T. 4 N., R. 31 E.	
	Sec. 24: W1/2	320

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Yellowstone County

Tract Number[1]	Legal Description[2]	Acres
* 71R	T. 4 N., R. 31 E.	
	Sec. 24: NE1/4NE1/4	40
* 72R	T. 4 N., R. 31 E.	
	Sec. 24: E1/2SE1/4	80
44R	T. 4 N., R. 31 E.	
	Sec. 26: All	640
	Sec. 34: S1/2	320
	Sec. 35: All	640
		1,600
45R	T. 4 N., R. 32 E.	
	Sec. 12: E1/2	320
	T. 4 N., R. 33 E.	
	Sec. 7: Lots 6, 7, 8, 9, & 10	192.28
		512.28
20D	T. 4 N., R. 32 E.	
20Fa	Sec. 22: N1/2NW1/4, SW1/4NW1/4, W1/2SW1/4	200
	T. 4 N., R. 32 E.	
* 73R	Sec. 30: Lots 1, 2, 3, & 4	141.96
	T. 4 N., R. 32 E.	
46R	Sec. 32: Lots 6, 7, & 8	59.44
	T. 4 N., R. 32 E.	
47R	Sec. 32: Lots 15, 16, & 17	73.74
48R	T. 4 N., R. 33 E.	
	Sec. 7: Lot 11	39.16
21D	T. 5 N., R. 33 E.	
	Sec. 26: S1/2SE1/4	80
* 74R	T. 5 N., R. 33 E.	
	Sec. 32: SW1/4NW1/4, N1/2SW1/4, SE1/4SW1/4	160
49R	T. 5 N., R. 33 E.	
	Sec. 27: All	640
	Sec. 28: N1/2	320
	Sec. 33: Lots 1, 2, & 3, N1/2, N1/2SW1/4, SW1/4SW1/4, NW1/4SE1/4	565.53
	Sec. 34: Lots 1, 2, 3, & 4, NW1/4NE1/4, N1/2NW1/4	301.92
		1,827.45
50R	T. 5 N., R. 33 E.	
	Sec. 34: Lot 5	23.80
51R	T. 5 N., R. 34 E.	
	Sec. 28: Lots 1, 2, 3, & 4	52.34
52R	T. 5 N., R. 34 E.	
	Sec. 28: Lots 12, 13, 14, 15, 16, 17, & 18	209.32
	Sec. 29: Lots 9 & 10	39.57
		248.89
23D	T. 5 N., R. 34 E.	
23Ra	Sec. 30: N1/2N1/2	160
6F	T. 1 S., R. 25 E.	
	Sec. 25: Lot 3	10.10
53R	T. 1 S., R. 25 E.	
	Sec. 34: Lot 4	20.27
54R	T. 1 S., R. 26 E.	
	Sec. 14: Lot 3, SE1/4NW1/4, E1/2SW1/4, S1/2SE1/4	242.27
	Sec. 23: N1/2NE1/4, NE1/4NW1/4	120
	Sec. 24: W1/2W1/2	160
	Sec. 25: NW1/4NW1/4	40
	Sec. 26: E1/2NE1/4	80
		642.27
55R	T. 1 S., R. 26 E.	
	Sec. 21: E1/2NE1/4, SW1/4NE1/4, SE1/4NW1/4	160
	Sec. 22: SW1/4NE1/4, NW1/4, N1/2S1/2	360
	Sec. 23: NW1/4SW1/4	40
		560
7F	T. 1 S., R. 26 E.	
	Sec. 30: Lot 10, SW1/4SE1/4	80
	Sec. 31: NW1/4NE1/4	40
		120

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Yellowstone County

Tract Number[1]	Legal Description[2]	Acres
9D	T. 1 S., R. 27 E. Sec. 30: SE1/4SW1/4	40
56R*	T. 2 S., R. 24 E. Sec. 13: Lots 10 & 11 Sec. 14: Lot 7 Sec. 23: Lot 13	 66.17 .58 2.35 69.10
57R	T. 2 S., R. 24 E. Sec. 22: Lot 7 Sec. 23: Lot 9	 2.58 7.04 9.62
1D	T. 2 S., R. 25 E. Sec. 18: Lot 12	40

Sweet Grass County

Tract Number[1]	Legal Description[2]	Acres
4R	T. 1 N., R. 13 E. Sec. 24: Lots 1 & 2	70.83
5R	T. 1 N., R. 13 E. Sec. 25: Lot 5	7.86
6R	T. 1 N., R. 14 E. Sec. 12: Lot 13	6.63
7R	T. 1 N., R. 14 E. Sec. 19: Lots 10 & 11 Sec. 30: Lot 5 T. 1 N., R. 13 E. Sec. 24: Lot 3 Sec. 25: Lot 9	 63.01 6.63 4.54 2.98 77.16
8R	T. 1 N., R. 15 E. Sec. 17: Lot 3	12.69
9R	T. 1 N., R. 15 E. Sec. 21: Lot 4 Sec. 22: Lot 5	 .56 5.80 6.36
30D	T. 1 N., R. 15 E. Sec. 33: SE1/4SE1/4	40
24D	T. 1 S., R. 12 E. Sec. 24: NE1/4NW1/4, S1/2NW1/4, N1/2SW1/4, SW1/4SW1/4	240
25D	T. 1 S., R. 13 E. Sec. 18: SE1/4SW1/4	40
10F	T. 1 S., R. 14 E. Sec. 3: Lot 8	7.01
26D	T. 1 S., R. 14 E. Sec. 6: Lot 7, SE1/4SW1/4	73.74
27D	T. 1 S., R. 14 E. Sec. 6: SE1/4NW1/4	40
28D	T. 1 S., R. 14 E. Sec. 8: W1/2NW1/4	80
29D	T. 1 S., R. 14 E. Sec. 18: Lots 3 & 4, SE1/4SW1/4	109.45
41D	T. 1 S., R. 15 E. Sec. 1: S1/2SE1/4NW1/4	20
31D	T. 1 S., R. 15 E. Sec. 2: SE1/4NE1/4, N1/2SE1/4	120
32D	T. 1 S., R. 16 E. Sec. 4: SE1/4NE1/4, NE1/4SE1/4	80
10R	T. 1 S., R. 16 E. Sec. 6: Lot 1	1.09

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Sweet Grass County

Tract Number[1]	Legal Description[2]	Acres
33D	T. 1 S., R. 16 E. Sec. 12: Lots 9, 10, 11, & 12	159.62
34D	T. 1 S., R. 16 E. Sec. 18: NW1/4NE1/4, NE1/4NW1/4	80
54D	T. 1 S., R. 16 E. Sec. 29: NW1/4, E1/2SW1/4, NW1/4SE1/4	280
11R	T. 1 S., R. 17 E. Sec. 26: Lot 3	13.63
36D	T. 1 S., R. 17 E. Sec. 29: SW1/4SE1/4	40
35D	T. 1 S., R. 17 E. Sec. 31: Lot 1	34.31
37D	T. 2 S., R. 17 E. Sec. 10: SW1/4SW1/4	40

Carbon County

Tract Number[1]	Legal Description[2]	Acres
1R	T. 2 S., R. 22 E.	
	Sec. 34: Lot 6	1.58
	Sec. 35: Lots 10, 11, 12, & 13	164.88
	T. 3 S., R. 22 E.	
	Sec. 3: Lots 6, 7, 8, & 9, SE1/4NW1/4	167.86
	Sec. 4: Lots 12, 13, 14, & 15, SE1/4NW1/4, NW1/4SE1/4	205.05
	Sec. 5: Lot 9	41.91
	Sec. 8: SE1/4NE1/4, SE1/4SW1/4, N1/2SE1/4	160
	Sec. 9: N1/2NW1/4, SW1/4NW1/4, W1/2SW1/4	200
		941.28
2R	T. 2 S., R. 23 E. Sec. 35: Lot 6	12.40
* 82R	T. 3 S., R. 22 E.	
	Sec. 1: W1/2SW1/4	80
	Sec. 2: E1/2SE1/4	80
		160
* 83R	T. 3 S., R. 22 E. Sec. 9: NE1/4NE1/4	40
* 84R	T. 3 S., R. 22 E. Sec. 10: SW1/4NE1/4	40
61D	T. 3 S., R. 22 E. Sec. 14: NE1/4SW1/4	40
3R	T. 3 S., R. 23 E. Sec. 5: Lots 6 & 7	92.10
* 85R	T. 3 S., R. 23 E. Sec. 9: NW1/4NE1/4	40
39D	T. 3 S., R. 23 E. Sec. 22: S1/2NW1/4	80

Stillwater County

Tract Number[1]	Legal Description[2]	Acres
* 75R	T. 1 S., R. 18 E. Sec. 24: NW1/4NE1/4, NW1/4, NW1/4SE1/4	240
* 76R	T. 1 S., R. 18 E. Sec. 24: SW1/4SW1/4	40
* 77R	T. 1 S., R. 18 E. Sec. 26: NW1/4NW1/4	40
* 78R	T. 1 S., R. 18 E. Sec. 26: SE1/4	160
12R	T. 1 S., R. 18 E. Sec. 34: Lot 1	49.17
* 79R	T. 1 S., R. 19 E. Sec. 32: N1/2NE1/4	80

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Stillwater County

Tract Number[1]	Legal Description[2]	Acres
47D	T. 2 S., R. 18 E. Sec. 9: SE1/4SE1/4	40
48D	T. 2 S., R. 18 E. Sec. 10: NE1/4SW1/4	40
* 80R	T. 2 S., R. 19 E. Sec. 8: SE1/4NE1/4	40
* 81R	T. 2 S., R. 19 E. Sec. 8: N1/2SW1/4	80
13R	T. 2 S., R. 19 E. Sec. 14: Lot 1	.13
52D	T. 2 S., R. 20 E. Sec. 10: SE1/4SE1/4	40
14R	T. 2 S., R. 20 E. Sec. 19: Lot 7	.61
15R	T. 2 S., R. 20 E. Sec. 20: Lot 5	5.90
16R	T. 2 S., R. 20 E. Sec. 21: Portion of Lot 2 -	Approx. 10
17R	T. 2 S., R. 20 E. Sec. 29: Lot 10 Sec. 31: Lot 8 Sec. 32: Lots 8, 9, & 10	2.23 .74 30.78 33.75
57D	T. 2 S., R. 23 E. Sec. 20: N1/2NE1/4	80
18R	T. 2 S., R. 23 E. Sec. 34: Lot 3	15.07
56D	T. 3 S., R. 17 E. Sec. 27: SW1/4SW1/4	40
19R	T. 3 S., R. 19 E. Sec. 14: Lot 8	10.09
21R	T. 3 S., R. 19 E. Sec. 22: Lot 3, NE1/4NW1/4	68.16
20R	T. 3 S., R. 19 E. Sec. 22: Lot 2	10.98
40D	T. 3 S., R. 19 E. Sec. 23: SW1/4NE1/4, NE1/4SW1/4, NW1/4SE1/4	120
22R	T. 3 S., R. 19 E. Sec. 28: Lot 3	8.28
42D	T. 3 S., R. 20 E. Sec. 6: Lot 3	40.29
23R	T. 3 S., R. 20 E. Sec. 6: Lots 11 & 12	46.57
24R	T. 3 S., R. 21 E. Sec. 6: Lot 1	25
53D	T. 3 S., R. 21 E. Sec. 7: NE1/4SE1/4	40
25R	T. 3 S., R. 21 E. Sec. 9: Lots 5, 6, 7, & 9	81.26
8F	T. 4 S., R. 16 E. Sec. 2: SW1/4NW1/4, NE1/4SW1/4, NW1/4SE1/4	120
26R	T. 4 S., R. 16 E. Sec. 4: SE1/4NW1/4 Sec. 5: SW1/4SW1/4 Sec. 6: Lot 7, SE1/4SW1/4, S1/2SE1/4 Sec. 7: NE1/4NW1/4 Sec. 8: N1/2N1/2 Sec. 9: NE1/4, E1/2NW1/4, NW1/4NW1/4, N1/2SE1/4, SE1/4SE1/4 Sec. 10: W1/2NW1/4, SW1/4, SW1/4SE1/4 Sec. 14: N1/2NW1/4, SE1/4NW1/4, NE1/4SW1/4 Sec. 15: N1/2N1/2	40 40 156.56 40 160 400 280 160 160 1,436.56

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Stillwater County

Tract Number[1]	Legal Description[2]	Acres
27R	T. 4 S., R. 16 E. Sec. 13: SW1/4NE1/4, S1/2NW1/4	120
28R	T. 4 S., R. 16 E. Sec. 13: SE1/4SE1/4	40
	T. 4 S., R. 17 E. Sec. 18: Lot 4	39.73
		79.73
29R	T. 4 S., R. 16 E. Sec. 21: SE1/4SW1/4, SW1/4SE1/4	80
	Sec. 28: N1/2NE1/4NW1/4	20
		100
30R	T. 4 S., R. 16 E. Sec. 22: SE1/4SW1/4, SE1/4	200
	Sec. 23: SW1/4SW1/4	40
	Sec. 26: SE1/4NE1/4, W1/2NW1/4, N1/2S1/2	280
	Sec. 27: NE1/4	160
		680
55D	T. 4 S., R. 16 E. Sec. 25: SW1/4NE1/4	40
9F	T. 4 S., R. 17 E. Sec. 5: NE1/4SW1/4, N1/2SE1/4	120
71D	T. 4 S., R. 17 E. Sec. 8: SE1/4SW1/4	40
	Sec. 17: NE1/4NW1/4, S1/2NW1/4	120
		160

LAND TENURE PROPOSAL SUMMARY

County	Disposal Acreage	# of Tracts	Retention Acreage	# of Tracts	Further Study Acreage	# of Tracts	Total Acreage	# of Tracts
Yellowstone	1,280.00	8	25,273.19	47	2,135.13	11	28,688.32	66
Sweet Grass	1,477.12	16	196.25	8	7.01	1	1,680.38	25
Carbon	120.00	2	1,325.78	7	-	-	1,445.78	9
Stillwater	640.29	10	3,461.26	26	240.00	2	4,341.55	38
Total	3,517.41	36	30,256.48[1]	88	2,382.14	14	36,156.03	138
							GRAND TOTAL	

[1] Includes 26 tracts (totalling 2,982 acres) identified as suitable for exchange.

Source: BLM, 1982

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APPENDIX 2.8: AREAS PRESENTLY WITHDRAWN OR PROPOSED FOR WITHDRAWAL FROM MINERAL ENTRY

1. Weatherman's Draw
   T. 8 S., R. 24 E.
   Sec. 29, E½SW¼,SE¼ — 240 acres

2. Petroglyph Canyon
   T. 9 S., R. 26 E.
   Sec. 26, S½
   Sec. 35, lots 1 to 3, inclusive,
   lots 6 to 11, inclusive
   NE¼,E½NW¼ — 549.28 acres

3. Mystery Cave
   T. 8 S., R. 28 E.
   Sec. 21, S½SW¼SE¼NW¼
   N½NW¼NE¼SW¼ — 10 acres

4. Britton Springs Cabin and Corral
   T. 58 N., R. 95 W.
   Sec. 20, N½SW¼NW¼ — 20 acres

5. Cottonwood Springs Corrals
   T. 58 N., R. 95 W.
   Sec. 22, S½NW¼SW¼SW¼
   N½SW¼SW¼SW¼ — 10 acres

6. Sykes Springs Corral
   T. 58 N., R. 95 W.
   Sec. 23, SW¼SE¼SW¼ — 10 acres

7. Crooked Creek Natural Area
   T. 58 N., R. 95 W.
   Sec. 28, NW¼ — 160 acres

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APPENDIX 2.9: SUMMARY OF CURRENT GRAZING CAPACITY FOR WILD HORSES

1. Current production excluding the Lower Pasture which is not freely available to wild horses - 2,018 AUMs.

2. Current production of Lostwater area - 223 AUMs
   Current production of Sorenson area - 166 AUMs
   Total - 389 AUMs

   By agreement, only 50% allocation will be made on these areas: 389 x 50% = 195 AUMs.

3. Current production for allocation: 2,018 - 195 = 1,823 AUMs.

4. Convert to horse AUMs; 1 horse = 1.25 AUMs

$$\frac{1{,}823 \text{ AUMs}}{1.25 \text{ AUM}} = 1{,}458 \text{ Horse AUMs}$$

5. Horses yearlong: $\frac{1{,}458 \text{ H. AUMs}}{12 \text{ months}} = 121$ Horses

Current Level

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Median)	AUMs
Grazable Woodland	10-14	F	59	20	2.95
		Un	60	-	-
	15-19	G	32	3	10.8
		F	8	4.4	1.8
		P	33	8.9	3.7
		Un	63	-	-
Grazable Woodland w/30-80% canopy cover	15-19	G	133	-	-
		Un	3,615	-	-
Sandy	10-14	F	35	5	7
Shallow	15-19	G	45	3	15.2

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APPENDIX 2.9: SUMMARY OF CURRENT GRAZING CAPACITY FOR WILD HORSES
(Continued, Page 2)

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Median)	AUMs
Shallow-Limy	5-9	F	1,430	20	71.5
		P	913	40	22.8
		Un	53	-	-
	10-14	G	400	13.3	30
		F	2,538	20	126.9
		P	1,425	40	35.6
		Un	329	-	-
	15-19	G	480	5.3	90
		F	1,165	8	145.6
		P	164	16	10.25
		Un	538	-	-
Shallow-Sandy	10-14	F	164	8	20.5
Silty	5-9	P	404	20	20.2
	10-14	F	114	5	22.8
		P	376	10	37.6
	15-19	G	824	2.2	370.8
		F	319	3.3	95.7
Silty-Limy-Stony	5-9	F	138	20	6.9
		P	330	40	8.25
	10-14	G	31	13.5	2.3
		P	13	43.3	.3
Silty-Stony	5-9	P	325	40	8.1
	10-14	G	272	5.3	51
		F	1,153	8	144.1
		P	1,366	16	85.4
		Un	121	-	-
	15-19	G	120	3	40.5
		F	88	4.4	19.8
		P	66	8.9	7.4
		Un	136	-	-
Very Shallow	5-9	P	14	35	.4
	15-19	G	15	5.4	2.8
Very Shallow-Limy	5-9	F	780	20	39
		P	1,241	40	31
		Un	119	-	-
		G			
		F			
		P			
		Un			

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APPENDIX 2.9: SUMMARY OF CURRENT GRAZING CAPACITY FOR WILD HORSES
(Continued, Page 3)

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Median)	AUMs
Very Shallow-Limy	10-14	G	80	13.3	6
		F	3,240	20	162
		P	1,033	40	25.8
	15-19	Un	407	-	-
		G	343	5.3	64.3
		F	1,267	8	158.4
		P	197	16	12.3
		Un	643	-	-
Rock Outcrop			8,956		-
			38,213*		2,017.75*
			6,083		136.5
			44,296		2,154.25

Wyoming Portion of Horse Range

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Median)	AUMs
MD-1			149	49.7	3
M-37			76	47	1.5
M-37(a)			290	78.7	3.5
M-26			359	35.9	10
M-38			787	27.1	29
			1,661		47
Lower Pasture (includes NPS)					
D-1			1,300	38.5	33.75
M-38			623	27.1	23
M-26			1,176	35.9	32.75
			1,323	-	0
			4,422		89.5

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APPENDIX 2.9: SUMMARY OF CURRENT GRAZING CAPACITY FOR WILD HORSES
(Continued, Page 4)

* These figures represent the Mystic Allotment and that portion of the PMWHR in Montana - see attached sheet for that portion in Wyoming. The carrying capacity on NFS lands is a BLM estimate and not an allocation on NFS lands. Allocation on NFS lands must be made by the Forest Service in their Forest Plan which is due to be published as a final EIS in 1984. A final determination of AUMs and carrying capacity on the Wild Horse Herd Area will be made jointly with the U.S. Forest Service, National Park Service and BLM in the context of a Wild Horse Herd Management Area Plan to be developed in 1984.

PZ Zone	Condition Class	Total Acres	Acres/AUMs (Median)	AUMs
		6,083	Total for Wyoming	136.5*

*The Wyoming portion of the PMWHR is used as a holding area for wild horses during capture and excessing operations. Limited forage is available in the raea and it will be reserved for use during capture operations. The 136.5 AUMs in the Wyoming portion are therefore not calculated into yearlong carrying capacity of the PMWHR.

Sources:

1. Ecological Site Inventory, BLM, 1981.

2. Ocular Reconnaissance Range Survey, BLM, 1971-72.

3. South Carbon County, Montana Cooperative Soil Survey Update Project, BLM and SCS, 1981.

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APPENDIX 2.10: SUMMARY OF LONG-TERM POTENTIAL FOR WILD HORSES

1. The potential production is the result of improving range condition on those range sites now in fair range condition that have the capability to respond to intensive management and improve to good condition in 25 years. Those range sites in poor range condition and the less productive range sites in fair range condition will not respond and improve in condition class during the 25 years.

2. Potential Production

Lostwater Area	286 AUMs
Sorenson Ext. Area	257 AUMs
Remaining HR Area	2,139 AUMs
Total	2,682 AUMs

3. Conversion to Horse AUMs:

$$\frac{2{,}682 \text{ AUMs}}{1.25 \text{ Horse AU}} = 2{,}146 \text{ Horse AUMs}$$

4. Horses Yearlong = $\frac{2{,}146}{12}$ = 179 Horses

Reason for change is that we are only saying that CC can be reached with intensive management. The potential is always there but only in the High Alternative will we possibly reach it.

Long-Term Potential (25 Years)

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Upper Potential)	AUMs
Grazable Woodland	10-14	F	59	20	2.95
		Un	60	-	-
	15-19	G	32	2.7	12
		F	8	4	2
		P	33	8	4.1
		Un	63	-	-
Grazable Woodland w/30-80% canopy cover	15-19	G	133	-	-
		Un	3,615	-	-
Sandy	10-14	F/G	35	5/3.3	7/10.5
Shallow	15-19	G	45	2.7	16.9
Shallow-Limy	5-9	F	1,430	20	71.5
		P	913	40	22.8
		Un	53	-	-

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APPENDIX 2.10: SUMMARY OF LONG-TERM POTENTIAL FOR WILD HORSES
(Continued, Page 2)

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Upper Potential)	AUMs
	10-14	G	400	13.3	30
		F/G	2,538	20/13.3	126.9/ 190.8
		P	1,425	40	35.6
		Un	329	-	-
	15-19	G	480	4.4	108
		F/G	1,165	6.7/5.3	174.75/ 218.4
		P	164	13.3	12.3
		Un	538	-	-
Shallow-Sandy	10-14	F/G	164	6.6/5.3	24.6/ 30.75
Silty	5-9	P	404	20	20.2
	10-14	F/G	114	5/3.3	22.8/34.2
		P	376	10	37.6
	15-19	G	824	2.2	370.8
		F/G	319	3.3/2.2	95.7/ 143.6
Silty-Stony-Limy	5-9	F/G	138	20/13.3	6.9/10.4
		P	330	40	8.25
	10-14	G	31	13.5	2.3
		P	13	43.3	.3
Silty-Stony	5-9	P	325	40	8.1
	10-14	G	272	4.4	61.2
		F/G	1,153	6.7/5.3	172.9/ 216.2
		P	1,366	13.3	102.5
		Un	121	-	-
	15-19	G	120	2.6	45
		F/G	88	4/3	22/29.7
		P	66	8	8.25
		Un	136	-	-
Very Shallow	5-9	P	14	35	.4
	15-19	G	15	4.4	3.4
Very Shallow-Limy	5-9	F	780	20	39
		P	1,241	40	31
		Un	119	-	-
	10-14	G	80	13.3	6
		F/G	3,240	20/13.3	162/243
		P	1,033	40	25.8
		Un	407	-	-
	15-19	G	343	4.4	77.2
		F/G	1,267	6.7/5.3	190/237.6

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APPENDIX 2.10: SUMMARY OF LONG-TERM POTENTIAL FOR WILD HORSES
(Continued, Page 3)

	P	197	13.3	14.8
	Un	643	-	-
Rock Outcrop		8,956	-	-
		38,213*		2,185.8/ 2,545.4
Totals from Wyoming		6,083		136.5
		44,296		2,322.3/ 2,681.9

* These figures represent the Mystic Allotment and that portion of the PMWHR in Montana - see attached sheet for the portion in Wyoming. The carrying capacity on NFS lands. Allocation on NFS lands must be made by the Forest Service in their Forest Plan which is due to be published as a final EIS in 1984. A final determination of AUMs and carrying capacity on the Wild Horse Herd Area will be made jointly with the U.S. Forest Service, National Park Service, and BLM in the context of a Wild Horse Herd Management Area Plan to be developed in 1984.

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APPENDIX 2.10: SUMMARY OF LONG-TERM POTENTIAL FOR WILD HORSES
(Continued, Page 4)

Wyoming Portion of Horse Range

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Median)	AUMs
MD-1			149	49.7	3
M-37			76	47	1.5
M-37(a)			290	78.7	3.5
M-26			359	35.9	10
M-38			787	27.1	29
			1,661		47
Lower Pasture (includes NPS)					
D-1			1,300	38.5	33.75
M-38			623	27.1	23
M-26			1,176	35.9	32.75
			1,323	-	0
			4,422		89.5
			6,083	Total for Wyoming	136.5

Sources:

1. Ecological Site Inventory, BLM, 1981

2. Ocular Reconnaissance Range Survey, BLM, 1971-1972

3. Southern Carbon County Area Montana Cooperative Soil Survey Update Project, BLM and SCS, 1981

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APPENDIX 3.1: PHYSICAL PROPERTIES OF SOILS

Geomorphic Soil Group	Range in Slope Causes	Surface Water Runoff Potential	Avg. Annual Runoff* Acre-feet/ Acre	EROSION SUSCEPTIBILITY Water Erosion Rating	Wind Erodibility Group (WEG)	Hydrologic Soil Group	Soil Loss Equation "K" Factor (Surface Layer)
ONE: Shale and sandstone uplands			.06 - .08				
Loamy soils	Gently rolling to very steep	Medium		Mod. - High	Severe	B, C	.32, .37
Clayey soils	Gently rolling to very steep	Med. - Very rapid		Mod. - High	Severe	C, D	.37, .43
Sandy soils	Gently rolling to strongly sloping	Very Slow - Slow		Slight - Mod.	Very Severe	A, B	.20
TWO: Floodplains, terraces and fans			.06 - .08				
Loamy soils	Nearly level to strongly sloping	Medium		Slight - High	Mod. - Severe	B, C	.24 - .37
Clayey soils	Nearly level to strongly sloping	Slow - Rapid		Slight - High	Slight-Severe	C, D	.37
Sandy soils	Nearly level to strongly sloping	Very slow - Slow		Slight - Mod.	Very Severe	A, B	.17 - .24
THREE: High terraces and benches			.06 - .08				
Loamy soils	Nearly level to moderately sloping	Medium		Slight - High	Mod. - Severe	B, C	.32, .37
FOUR: Mountains and foothills			.19 - .21				
Loamy soils	Gently sloping to very steep	Slow - Med.		Slight - High	Mod. - Severe	B, C	.28 - .37

*Loamy and clayey soils will produce .04 - .06 acre-feet/acre in the 5-9" precipitation zone of Carbon County.

Column

1. GEOMORPHIC SOIL GROUP

A group of soils having a unique kind and degree of limitation for alternative land use and treatment based on parent material, soil quality and land features.

2. SLOPE CLASSES

Description	Slope Percent	Description	Slope Percent
Nearly level	0 to 2	Moderately steep or hilly	15 to 25
Gently sloping and undulating	2 to 4	Steep	25 to 45
Moderately sloping or gently rolling	4 to 8	Very steep	45 + %
Strongly sloping or strongly rolling	8 to 15		

3. SURFACE WATER RUNOFF

Descriptions

Very slow - Free water lies on the surface for long periods or enters immediately into soil.

Slow - Free water covers the soil for significant periods or enters the soil rapidly and a large part of the water passes through the profile or evaporates into the air.

Medium - Surface water flows away at such a rate that a moderate proportion of the water enters the soil profile and free water lies on the surface for only short periods. With medium runoff, the loss of water over the surface does not reduce seriously the supply available for plant growth.

Rapid - A large proportion of the precipitation moves rapidly over the surface of the soil and a small part moves through the soil profile. Surface water runs off nearly as fast as it is added.

Very rapid - A very large part of the water moves rapidly over the surface of the soil and a very small part goes through the profile.

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4. EROSION SUSCEPTIBILITY

A. Water Erosion Ratings

Water erosion hazard is rated for soils that are bare of vegetation.

2 - 4	Less than 250'	Slight	Slight	Slight	Slight
	250 - 1,000'	Moderate	Moderate	Slight	Slight
	More than 1,000'	Moderate	Moderate	Moderate	Slight
4 - 8	Less than 250'	Moderate	Moderate	Slight	Slight
	250 - 1,000'	Moderate	Moderate	Moderate	Slight
	More than 1,000'	High	Moderate	Moderate	Slight
8 - 15	Less than 250'	High	Moderate	Moderate	Moderate
	250 - 1,000'	High	High	Moderate	Moderate
	More than 1,000'	High	High	High	Moderate
15 - 25	Less than 250'	High	High	Moderate	Moderate
	250 - 1,000'	High	High	High	Moderate
	More than 1,000'	High	High	High	High
25+	All	High	High	High	High

B. Wind Erodibility Groups (WEG)

WEG		Predominant Soil Texture Class of Surface Layer
1.	(Very Severe)	- All sands: coarse sand, medium sand, fine sand, and very fine sand.
2.	(Very severe)	- All loamy sands: loamy coarse sand, loamy sand, loamy fine sand and loamy very fine sand.
3.	(Severe)	- All sandy loams: coarse sandy loam, sandy loam, fine sandy loam and very fine sandy loam.
4L.	(Severe)	- All calcareous loam, silt loam, sandy clay loam, or calcareous clay loam and silty clay loam soils with less than 35 percent clay content and more than 5 percent finely divided calcium carbonate.
4.	(Severe)	- All clays and silty clays, and clay loam and silty clay loam soils with more than 35 percent clay.
5.	(Moderate)	- Noncalcareous loam and silt loam soils with less than 18 percent clay, and all noncalcareous sandy clay loam and sandy clay soils.
6.	(Moderate)	- All loam and silt loam soils with more than 18 percent clay, and clay loam soils with less than 35 percent clay content.
7.	(Slight)	- Noncalcareous silty clay loam soils with less than 35 percent clay.
8.	(Non-erosive)	- Soils not suitable for cultivation due to wetness and percent rock fragments. Wind erosion not a problem.

5. HYDROLOGICAL SOIL GROUP

A. (Low runoff potential). Soils having high infiltration rates even when thoroughly wetted and consisting chiefly of deep, well to excessively drained sands or gravels. These soils have a high rate of water transmissions.

B. Soils having moderate infiltration rates when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

C. Soils having slow infiltration rates when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.

D. (High runoff potential). Soils having very slow infiltration rates when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

6. SOIL LOSS EQUATION

"K" Factor - It is the soil erodibility factor. It shows how easily each soil will erode when rain falls on bare ground; or is a measure of the susceptibility of soil particles to detachment and transport by rainfall and runoff.

Acceptable entries for K are: .02, .05, .10, .15, .17, .20, .24, .28, .32, .37, .43, .49, .55, .64. The larger the number the more susceptible the soil is to erosion.

Sources:

1. Southern Carbon County Area, Montana: Cooperative Soil Survey Update Project, Soil Conservation Service - BLM, May 1981.

2. Prairie Potholes EIS, BLM, September, 1981.

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APPENDIX 3.2: DESCRIPTION OF RIPARIAN ZONES AND WOODY TYPES IN THE BILLINGS RESOURCE AREA

INTRODUCTION

The following is presented to define the meaning of the term "riparian," as it will be used in the Billings Area RMP/EIS. Three kinds of riparian zones and three woody types (which are not riparian but have greater than average soil moisture) are described. References to ecological range site or woodland site descriptions are made where applicable.

Riparian zones are defined as a specialized form of wetland producing specific kinds of vegetation used for wildlife habitat, livestock grazing, stream bank stabilization, and control of water quality.

There are three kinds of riparian zones (listed with characteristic vegetation):

Description of Riparian Zones

1. Wet or Subirrigated areas along, adjacent to, or contiguous with rivers and streams.

   Characteristic vegetation:

Woody Species	Grasses & Grasslike
Cottonwood	American sloughgrass
Willow	Bearded wheatgrass
Buffaloberry	Mat muhly
Snowberry	Northern mannagrass
Rose	Prairie cordgrass
	Slender wheatgrass
	Tall reedgrasses
	Tufted hairgrass
	Western wheatgrass
	Sedges and rushes

Refer to range site descriptions for Wetland, Subirrigated, and Saline Lowland for understory species or if tree canopy cover is over 10% refer to Woodland Site description for Hardwood Bottom land. Greasewood is the characteristic woody species along streams in saline floodplains.

2. Periodically flooded lake and pit reservoir areas.

   Characteristic vegetation:

Sedges	Western wheatgrass
Rushes	Foxtail barley (Invader)
Nuttail alkaligrass	

3. Reservoirs with relatively stable water levels.

   Characteristic vegetation:

Sedges	Cattails
Rushes	Willow
Bulrish	Cottonwood

   Note: Many of these areas contain introduced species such as Russian olive, and caragana.

Description of Woody Types (not riparian)

Other areas with specific woody types (having grass understory and greater than average soil moisture) are also important for wildlife habitat, livestock grazing, and watershed protection. They are associated with two landforms:

1. Woody floodplain type.

Areas on floodplains having woody species and an understory of grasses. These areas may be adjacent to riparian zones, but have no significant water table or stream influence. They are in floodplains receiving rare-to-common flooding of brief duration. (Flooding may be from stream overflow from adjacent valley sides onto floodplains area.) These areas are in Overflow range sites or woodland sites.

   Characteristic vegetation:

Woody Species	Grasses
Big sagebrush	Basin wildrye
Silver sagebrush	Green needlegrass
Snowberry	Western wheatgrass
Rose	Slender wheatgrass
Buffaloberry	Canby bluegrass
Serviceberry	Needleandthread
Chokecherry	Other perennial grasses
Greasewood	
Rubber rabbitbrush	

Refer to Overflow range site or Hardwood Bottom land woodland site descriptions for understory vegetation.

2. Woody Draw Type.

Narrow areas along some deeply dissecting draws in the uplands with woody or brushy types.

   Characteristic vegetation:

Woody Species	Grasses
Buffaloberry	Basin wildrye
Snowberry	Green needlegrass
Rose	Western wheatgrass
Serviceberry	Slender wheatgrass
Chokecherry	
Silverberry	

   Willow and cottonwood localized by seeps or springs. (Minor riparian zone)

   Refer to Woodland Site Description for Hardwood Bottom land for other understory species.

Source: BLM, 1982

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APPENDIX 3.3: SUITABILITY GUIDE FOR RANGELAND MECHANICAL TREATMENTS

Montana BLM
December 1982

The following guide has been developed by BLM Soil Scientists, and other specialists, for use on Montana and Dakota public lands.

Mechanical treatments may be considered as an alternative method of increasing vegetative production and improving watershed condition. Treatment feasiblity should be considered where grazing management systems cannot reach desired goals in a realistic time.

Factors in influencing feasiblity of treatments are: (1) soil properties, (2) existing plant community; (3) objectives of treatment; (4) anticipated response from treatment; (5) economics; (6) availability of equipment; (7) conditions that influence operation of equipment.

The objectives of mechanical treatment should be carefully analyzed. It may be desirable to: (1) change existing vegetation (i.e., reduce club-moss-blue grama dominance) and/or (2) correct a soil problem (i.e., break-up a claypan or a compacted layer). Vegetation can be changed to improve range condition or to maximize production. Treatment should be selected to best reach the desired objective.

When it has been determined that management of livestock cannot reach the desired improvement in vegetation, suitability for mechanical treatment can be determined by considering: (1) soil properties and (2) conditions that influence operation of equipment. To use the table, first consider each factor in the left column independent of others, then consider interrelated factors to reach a final rating. These are evaluated in the following table.

Relevant conditions not evaluated in the table must also be considered. For example, kinds of bedrock (i.e., consolidated, fractured, etc.) will influence suitablity for mechanical treatments. Aspect will influence the amount of moisture available for plant use.

Treatment effect upon water infiltration and runoff is an important consideration. Many treatments will increase infiltration and reduce runoff; but, less runoff may not be desirable in cases where downstream use of water has a higher priority.

Source: BLM, 1982

Montana BLM
Dec.

SUITABILITY GUIDE FOR RANGELAND MECHANICAL TREATMENT

Sedimentary Plains, Mountains and Foothills
10 to 14 inch

Property Affecting Use	Suited	Unsuited	Suited	Unsuited	Suited	Unsuited
Slope	≤ 15%	> 15%	≤ 15%	> 15%	≤ 8%	> 8%
Depth to Bedrock						
Lithic	≥ 20"	< 20%	≥ 20"	< 20"	≥ 20"	< 20"
Paralithic	≥ 10"	< 10"	≥ 10"	< 10"	≥ 10"	< 10"
Calcium Carbonate *	< e, es	≥ ev	< e	≥ es, ev	< e	≥ es, ev
Texture of Surface layer*	All textures except cos, s, fs, lfs, ls	cos, s, fs, lfs, ls	All textures except cos, s, fs, lfs, ls	cos, s, fs, lfs, ls	All textures except cos, s, fs, lfs, ls	cos, s, fs, lfs, ls
Coarse Fragments in Surface Layer; (vol.)						
Gravel + Cobbles	≤ 25%	> 25%	≤ 25%	> 25%	≤ 15%	> 15%
Stones + Boulders	≤ 3%	> 3%	≤ 3%	> 3%	≤ 3%	> 3%
Salts (mmhos/cm)	< 12	≥ 12	< 12	≥ 12	≤ 4	> 4
SAR	< 12	> 12	< 12	≥ 12	≤ 4	> 4
Structure of Surface Layer	All except those in unsuited.	Single grained w/coarse texture or >40% clay w/ massive or vesicular crust.	All except those in unsuited.	Single grained w/coarse texture or >40% clay w/massive or vesicular crust.	All except those in unsuited.	Single grained w/coarse testure or > 40% clay w/ massive or vesicular crust.
Flooding Hazard	None to occasional	Frequent	None to occasional	Frequent	None to occasional	Frequent
Drainage Class	All except those in unsuited.	Excessively drained; poor or very poorly drained.	All except those in unsuited.	Excessively drained; poor or very poorly drained.	All except those in unsuited.	Excessively drained; poor or very poorly drained.
Tree Canopy Cover	< 10%	> 10%	< 10%	> 10%	0	> 0

*Applies to surface layer (upper 6 to 8 inches).

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APPENDIX 3.4: SELECTION OF LAND TREATMENT BY RANGE SITE

Montana BLM
December 1982

In addition to the foregoing interpretation guide on the suitability of soils and related factors for rangeland mechanical treatment, it may be helpful to consider the selection of land treatment according to range sites.

The following table shows the type of treatment (mechanical, burning or chemical) suited to correct common soil or vegetation problems found on certain range sites. Where two or more vegetation or soil problems are present (dense sagebrush on claypan soils) select the treatment that will solve both problems; the claypan problem can't be reduced just by burning sagebrush. Range sites not shown in the table are generally unsuited to mechanical treatments.

Note that vegetative changes can be accomplished with fire, chemicals or a surface layer treatment (i.e., chiseling) but to correct a subsoil problem may require a deeper treatment (i.e., furrowing or ripping).

Additional factors must be considered to determine the final suitability of a site for mechanical treatment. These factors are in the foregoing section, on rating soil properties and related factors. The narrative discusses objectives of a treatment.

Finally, land treatments cannot be considered an alternative to good management practices, but will require a high level of management following the treatments.

GUIDE TO TREATMENT SELECTION BY DOMINANT RANGE SITES 1/

Vegetation or Soil Problem	CLAY PAN	CLAYEY	DENSE CLAY 2/	OVERFLOW	SANDY	SILTY	SHALLOW
Blue grama and/or clubmoss	A4, A2, A1, A3 C1, C3, C2 D1, D2	A3, A2, A1 B1, B3, B2 D1, D2	N/A	A1, A2, A3, A4 D1, D2	A3, A2, A1 D1, D2	A3, A2, A1 B1, B3, B2 D1, D2	A3, A2, A1 B1, B3, B2 D1
Claypan	A4, A2, A1, A3 C1, C3, C2 D1, D2	N/A	N/A	N/A	A4 D1, D2 E	N/A	N/A
Surface Layer compaction Less than 8 inches	A3, A2, A1 B1, B3 D1	A3, A2, A1 B1, B3, B2 D1, D2	A2, A1 C1, C3	A2, A1, A3 D1	A3, A2, A1 D1, D2	A3, A2, A1 B1, B3, B2 D1, D2	A3, A2, A1 B1, B3, B2 D1, D2
Subsoil compaction More than 8 inches	A4, A3 C1, C3 E	A4, A1, A2, A3 C1, C2, C3 D1, D2	N/A	A4, A2, A1, A3 D1	N/A	A4, A2, A1, A3	N/A
Dense big sagebrush (30% canopy cover)	F, H D2	F, H D2	F, H	N/A	N/A	F, H D2	F, H D2
Weedy or nearly barren areas	C2 D2, D1	D1, D2 B2, B1 C2 A2, A3, A1	A2, A1 C2	A2, A3 D1, D2	D1, D2	D1, D2 B2 C2	B2 C2 D1, D2
Borrow areas	D1, D2 G	D1, D2 G	D1, D2 G	D1, D2 G	D1, D2 G	D1, D2 G	D1, D2 G

1/ Make choice of treatments based on range condition, planned grazing system, available equipment, desire of permittee and benefit/cost. The order of listed options may be changed based on local conditions.

These range sites are dominant in the treatment area.

2/ Good range management is usually the most economical choice of treatment due to the low production potential on this range site.

NOTE: Fertilizer is a tool that can be used to encourage better livestock distribution in addition to other uses.

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KEY TO TREATMENTS ON RANGELAND

A Chiseling at 4-6 inch depth
- A1 Using straight shanks - 2 operations (last on contour)
- A2 Using twisted shanks - 2 operations (last on contour)
- A3 Using 6-inch shovels (sweeps) - 1 operation (on contour)
- A4 Deep chiseling at 6 - 10-inch depth - 2 operations (last on contour)

B Contour scalping at 2 - 4-inch depth
- B1 Interseed with alfalfa
- B2 Interseed with grass and alfalfa
- B3 No interseeding

C Contour furrowing at 4 - 10-inch depth
- C1 Interseed with alfalfa
- C2 Interseed with grass and alfalfa
- C3 No interseeding

D Seedbed preparation and seeding
- D1 Two operations with chisel, then third operation with drill attached.
- D2 Plow and seed.

E Ripping at 10-20-inch depth

F Burning

G Fertilizing

H Chemical

Source: BLM, 1982

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APPENDIX 3.5: MEMO ON ADMINISTRATION ON THE PMWHR BETWEEN WYOMING AND MONTANA

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : District Manager, Billings District, Montana
District Manager, Worland District, Wyoming

DATE: MAR 18 1975

FROM : State Director, Montana
State Director, Wyoming

SUBJECT: Administration of the Pryor Mountain Wild Horse Range

This memo supersedes the memo of January 9, 1969, on the same subject. A new memo is deemed necessary for the dual purpose of 1) Shifting jurisdiction of additional national resource lands from the Worland District to the Billings District, and 2) Broadening and clarifying the nature of the responsibilities shifted.

On September 9, 1968, the Secretary of the Interior established the Pryor Mountain Wild Horse Range by so designating a block of approximately 29,700 acres of national resource lands in the State of Montana and 2,300 acres in the State of Wyoming. On September 9, 1969, the Assistant Secretary of the Interior designated an additional 1680 acres in the State of Wyoming as a part of the Pryor Mountain Wild Horse Range. Copies of the Federal Register publications for the two designations are attached.

Since that time, it has been determined and mutually agreed by the State Directors of Wyoming and Montana that an additional 2,360 acres of national resource land in Wyoming and 560 acres of national resource land in Montana be made a part of the Wild Horse Range to facilitate management pursuant to authority contained in Public Law 92-195. A description of this latter 2,360 acres is attached. In total, this will result in approximately 6,340 acres of national resource lands in Wyoming that will be a part of the Pryor Mountain Wild Horse Range.

Subject to valid existing rights, the lands involved in the Pryor Mountain Wild Horse Range are to be primarily administered for the protection and management of wild horses, wildlife, watershed, recreation, archaeological and scenic values.

The administration of the range requires close coordination with several State and Federal agencies and with representatives from a number of interest groups. Proper management of the resources makes it necessary for BLM personnel to spend considerable time on the site and to maintain close surveillance on resource conditions. The conditions and requirements of managing this special purpose area have dictated that one office of the Bureau be the focal point for administration.

Since a fraction of the total area is located in the State of Wyoming, and since the critical wildlife habitat is essential to species originating in Montana and the effect of watershed management accrues principally downstream in the State of Montana, it is only logical that the range in total should be administered by the Montana office of the Bureau.

5010-108

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The logic of total administration by the Montana office has been further demonstrated by the successful management of the range by the Billings office.

In view of the foregoing, it is reaffirmed that the Billings District Office will administer resource management in both the Montana and the Wyoming portions of the Pryor Mountain Wild Horse Range, including but not limited to grazing, wildlife, soil and watershed conservation, recreation, lands, minerals, forestry, fire, cadastral survey, access, etc. No action responsibilities beyond those functions of application or offer and maintenance of official records is intended by Wyoming offices.

As an example, all applications or offers filed pursuant to the public land and mineral leasing laws for national resource land in Wyoming within the range will be filed in Cheyenne and referred to the District Manager, Billings, Montana, for report and recommendations including any special stipulations necessary to further the objectives of the range.

For the purpose of coordination and record keeping, the State Director of Wyoming will be advised of all transactions involving lands in Wyoming in order that land office plats, statistical reports and improvement records may be kept current. Since the State of Wyoming is concerned with the enforcement of livestock sanitary measures, game management, recreation and its share of revenues from the public lands located within the borders of the state, all such matters including news releases and public information programs affecting Wyoming will be coordinated with the Worland District and State Director of Wyoming.

The contents of this memorandum are subject to periodic review and may be modified by mutual consent of the State Directors.

State Director
Wyoming

State Director
Montana

Attachments: Federal Register publications 9/12/68 and 9/13/69
Description of additional 2,360 Wyoming acres.

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APPENDIX 3.6: STATE ECOSYSTEM/LANDFORM REPRESENTATION EXISTING IN STATUTORY WILDERNESS

A. Ecosystem/Landform

No.	Name	Existing Representations in Statutory Wilderness										
		BLM Areas		Other Agency Areas*			BLM Areas - Other States			Other Agency Areas*		
		No. Areas	Acreage	Agency	No.	Acreage	State	No.	Acreage	State	No.	Acreage
Bailey/ Kuchler #57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	USFWS	1	20,847	N/A	N/A	N/A	N/A	N/A	N/A
Bailey/ Kuchler #56	Foothills Prairie	N/A	N/A	USFWS	2	1,037,918	N/A	N/A	N/A	N/A	N/A	N/A
	Totals											

B. Ecosystem/Landform

No.	Name	Representations in Wilderness Endorsed by President - Pending Before Congress										
		BLM Areas		Other Agency Areas*			BLM Areas - Other States			Other Agency Areas*		
		No. Areas	Acreage	Agency	No.	Acreage	State	No.	Acreage	State	No.	Acreage
Bailey/ Kuchler #57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	USFWS	15	161,480	N/A	N/A	N/A	N/A	N/A	N/A
Bailey/ Kuchler #56	Foothills Prairie	N/A	N/A	USFWS	15	121,520	N/A	N/A	N/A	N/A	N/A	N/A
	Totals											

C. Ecosystem/Landform

No.	Name	Potential Sources of Representations						
		BLM WSAs			Other Agency WSAs*			
		District	No.	Acreage	Agency	Region, Park, Refuge	No.	Acreage
Bailey/ Kuchler #57	Grama/ Needlegrass/ Wheatgrass	Lewistown	8	152,437				
		Miles City	5	81,372	N/A	N/A	N/A	N/A
		Butte	1	5,976				
Bailey/ Kuchler #56	Prairie Foothills	Butte	17	147,478	USFS	Lewis & Clark	1	26,068

* Includes areas administered by the State as Wilderness.

NATIONAL ECOSYSTEM/LANDFORM REPRESENTATION

A. Ecosystem/Landform

No.	Name	Existing Representations in Statutory Wilderness							
		BLM Areas				Other Agency Areas*			
		State	District	No.	Acreage	State	Agency	No.	Acreage
Bailey/ Kuchler #57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	N/A	N/A	Montana	USFWS	1	20,847
Bailey/ Kuchler #56	Foothills Prairie	N/A	N/A	N/A	N/A	Montana	USFWS	2	1,037,918

B. Ecosystem/Landform

No.	Name	Representatives in Wilderness Endorsed by President - Pending Before Congress							
		BLM Areas				Other Agency Areas*			
		State	District	No.	Acreage	State	Agency	No.	Acreage
Bailey/ Kuchler #57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	N/A	N/A	Montana	USFWS	15	161,480
Bailey/ Kuchler #56	Foothills Prairie	N/A	N/A	N/A	N/A	Montana	USFWS	5	121,520

C. Ecosystem/Landform

No.	Name	Location of BLM WSAs with Potential Representations			
		State	District	Number of Areas	Acreage
Bailey/ Kuchler #57	Grama/Needlegrass/ Wheatgrass	Montana	Lewistown	8	152,437
			Miles City	5	81,372
			Butte	1	5,976
Bailey/ Kuchler #56	Prairie Foothills	Montana	Butte	17	147,478

D. Ecosystem/Landform

No.	Name	Location of Other Agency Study Areas with Potential Representations*			
		State	District	Number of Areas	Acreage
Bailey/ Kuchler #57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	N/A	N/A
Bailey/ Kuchler #56	Prairie Foothills	N/A	N/A	N/A	N/A

* Includes areas administered by the State as Wilderness.

Source: BLM, 1981

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APPENDIX 3.7: PROXIMITY TO POPULATION CENTERS

A. Population Centers Within One Day's Travel Time of WSAs — Statutory Wilderness Within One Day's Travel Time of Identified Population Centers

	State	No.	Acreage
Billings, Montana	Montana	6	2,380,100
	Wyoming	5	2,179,042
			4,559,142
Great Falls, Montana	Montana	13	3,160,539
	Wyoming	3	1,594,800
	Idaho	2	3,318,228
			8,073,567
Casper, Wyoming	Colorado	11	979,729
	Montana	1	849,400
	Wyoming	6	2,193,332
			4,022,461

B. Wilderness Areas Endorsed by the President Within One Day's Travel Time of Identified Population Centers

	State	No.	Acreage
Billings, Montana	Montana	33	676,300 Est.
	Wyoming	21	2,770,500 Est.
			3,446,800 Est.
Great Falls, Montana	Montana	48	1,911,300 Est.
	Wyoming	12	2,048,000 Est.
	Idaho	11	657,800 Est.
			4,617,100 Est.
Casper, Wyoming	Colorado	2	469,463
	Montana	3	287,000
	Utah	4	187,302
	Wyoming	26	2,972,831
			3,916,596

C. Other Study Areas Within One Day's Travel Time of Identified Population Centers

	BLM			Other Agency		
	State	No.	Acreage	State	No.	Acreage
Billings, Montana	Montana	41	414,404	Montana	23	1,152,900 Est.
	Wyoming	34	320,596	Wyoming	6	365,200 Est.
	Idaho	1	24,922	Idaho	2	153,750 Est.
			759,922			1,670,850 Est.
Great Falls, Montana	Montana	37	358,300	Montana	25	1,207,750 Est.
	Wyoming	1	25,210	Idaho	2	49,200 Est.
	Idaho	5	54,368			1,256,950 Est.
			437,878			
Casper, Wyoming	Colorado	19	201,812	Colorado	4	135,430
	Montana	6	41,001	Idaho	1	202,630
	Utah	5	7,260	Montana	1	480
	Wyoming	49	582,065	Wyoming	9	460,422
			832,138			798,962

Source: BLM, 1982

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A. Status of BLM Areas Under Study

County	BLM District	Unit Number	Total Acreage	Study Start and Completion Dates: Start	Completion	Status
Madison	Butte	MT-076-063	860	1981	1983	Part of USFS Planning EIS
Madison	Butte	MT-076-079	1,469	1980	1980	Completed USFS Draft
Teton	Butte	MT-075-102	4,927	1980	1983	MFP 2 Complete
Teton	Butte	MT-075-105	3,085	1980	1983	MFP 2 Complete
Teton	Butte	MT-075-106	3,086	1980	1983	MFP 2 Complete
Teton	Butte	MT-075-107	196	1980	1983	MFP 2 Complete
Lewis & Clark	Butte	MT-075-110	595	1980	1983	MFP 2 Complete
Jefferson	Butte	MT-075-114	3,585	1980	1983	MFP 2 Complete
Jefferson	Butte	MT-075-115	5,976	1980	1983	MFP 2 Complete
Park	Butte	MT-075-133	53	1980	1983	MFP 2 Complete
Powell	Butte	MT-074-150	11,580	1982	1985	URA 2 Complete
Powell	Butte	MT-074-151a	11,380	1982	1985	URA 2 Complete
Powell	Butte	MT-074-151b	4,257	1982	1985	URA 2 Complete
Granite	Butte	MT-074-155	520	1982	1985	URA 2 Complete
Carbon	Lewistown	MT-067-205	3,955	1982	1983	MFP 2 Complete
Carbon	Lewistown	MT-067-206	16,927	1982	1983	MFP 2 Complete
Carbon	Lewistown	MT-067-207	4,550	1982	1983	MFP 2 Complete
Golden Valley	Lewistown	MT-067-212	6,870	1982	1983	MFP 2 Complete
Valley	Lewistown	MT-064-356	59,112	1983	1984	URA 2 Complete
Rosebud	Miles City	MT-027-701	8,440	1981	1984	MFP 2 Complete
Powder River	Miles City	MT-027-702	5,650	1981	1984	MFP 2 Complete
Rosebud	Miles City	MT-027-736	1,484	1981	1984	MFP 2 Complete

B. Recommendations Transmitted by this Report

District	Resource Area	Plan Name	Unit Number	Unit Name	Total Acreage	Recommendations: Acres Suitable	Acres Nonsuitable
Lewistown	Billings	Billings RMP	MT-067-212	Twin Coulee	6,870	0	6,870
			MT-067-206	Pryor Mountain	16,927	16,927	0
			MT-067-205	Burnt Timber Canyon	3,955	3,430	525
			MT-067-207	Big Horn Tack-on	4,550	0	4,550

C. Completed BLM Studies -- Awaiting Presidential Recommendations

District	Resource Area	Plan Name	Unit Number	Unit Name	Total Acreage	SD's Preliminary Recommendations
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-001	Ruby Mountains	26,611 ac.	15,615 ac. suitable 10,996 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-002	Blacktail Mtns.	17,479 ac.	10,986 ac. suitable 6,493 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-034	Farlin Creek	1,139 ac.	610 ac. suitable 529 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-007	E. Fork Blacktail Deer Creek	6,180 ac.	6,180 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-022	Hidden Past Creek	15,475 ac.	15,475 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-026	Belle Limekiln Canyons	9,588 ac.	9,588 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-028	Henneberry Ridge	9,756 ac.	9,756 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-069	Axolotl Lake	6,578 ac.	6,578 ac. nonsuitable
Lewistown	Phillips	Missouri Breaks Wilderness Suitability Study/EIS	MT-066-256	Cow Creek	34,050 ac.	21,590 ac. suitable 12,460 ac. nonsuitable
Lewistown	Phillips	Missouri Breaks Wilderness Suitability Study/EIS	MT-066-266	Antelope Creek	12,350 ac.	9,600 ac. suitable 2,750 ac. nonsuitable
Lewistown	Valley	Missouri Breaks Wilderness Suitability Study/EIS	MT-065-278	Burnt Lodge	13,850 ac.	13,850 ac. suitable
Miles City	Big Dry	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-657	Seven Blackfoot	20,250 ac.	5,710 ac. suitable 14,540 ac. nonsuitable
Miles City	Powder River	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-684	Terry Badlands	43,450 ac.	29,020 ac. suitable 14,430 ac. nonsuitable
Lewistown	Judith	Missouri Breaks Wilderness Suitability Study/EIS	MT-068-244	Dog Creek South	5,150 ac.	5,150 ac. nonsuitable
Lewistown	Judith	Missouri Breaks Wilderness Suitability Study/EIS	MT-068-246	Woodhawk	8,100 ac.	8,100 ac. nonsuitable

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C. Completed BLM Studies -- Awaiting Presidential Recommendations (Continued)

District	Resource Area	Plan Name	Unit Number	Unit Name	Total Acreage	SD's Preliminary Recommendations
Lewistown	Havre	Missouri Breaks Wilderness Suitability Study/EIS	MT-066-250	Stafford	4,800 ac.	4,800 ac. nonsuitable
Lewistown	Havre	Missouri Breaks Wilderness Suitability Study/EIS	MT-066-253	Ervin Ridge	10,200 ac.	10,200 ac. nonsuitable
Miles City	Big Dry	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-675	Bridge Coulee	5,900 ac.	5,900 ac. nonsuitable
Miles City	Big Dry	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-677	Musselshell Breaks	8,650 ac.	8,650 ac. nonsuitable
Miles City	Big Dry	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-633	Billy Creek	3,450 ac.	3,450 ac. nonsuitable

D. Statutory Wilderness (all agencies)

Agency	County(s)	Unit Name & Number	Unit Acreage
BLM	N/A	N/A	N/A

Agency	County(s)	Unit Name & Number	Unit Acreage
USFS	Carbon, Stillwater, Sweet Grass, Park	Absaroka-Beartooth, NF 106	920,377
USFS	Granite, Ravalli, Deer Lodge, Beaverhead	Anaconda-Pintler, NF 003	157,874
USFS	Flathead, Teton, Lewis & Clark, Powell	Bob Marshall, NF 005	1,009,356
USFS	Lincoln, Sanders	Cabinets, NF 010	94,272
USFS	Lewis & Clark	Gates of the Mountains, NF 027	28,562
USFS	Flathead Lake	Great Bear, NF 107	286,700
USFS	Missoula	Mission Mountains, NF 050	73,877
USFS	Missoula	Rattlesnake, 1-801	20,000
USFS	Lewis & Clark, Powell	Scapegoat, NF 073	239,296
USFS	Ravalli	Selway-Bitterroot, NF 074	248,893
USFS	Granite	Welcome Creek, NF 103	28,135
	TOTAL USFS	Number of Areas 11	3,107,342

Agency	County(s)	Unit Name & Number	Unit Acreage
USFWS	Beaverhead	Red Rock Lakes, WR-036	32,350
USFWS	Sheridan	Medicine Lake National Wildlife Refuge, WR-027	11,800
USFWS	Phillips	UL Bend National Wildlife Refuge, WR-047	20,847
	TOTAL USFWS	Number of Areas 3	64,997

Agency	County(s)	Unit Name & Number	Unit Acreage
NPS	N/A	N/A	N/A

Agency	County(s)	Unit Name & Number	Unit Acreage
State Administered	N/A	N/A	N/A

E. Recommendations Pending Before Congress (all agencies)

Agency	County(s)	Unit Name	Unit Number	Unit Acreage*
USFS	Lincoln	Cabinet Face West	C 1670	8,250
USFS	Sanders, Lincoln	Scotchman Peaks	A & B 1662	60,416
USFS	Sanders	Cabinet Mtn. Addition	C 1681	442
USFS	Sanders	Chippewa Creek (Cabinet Mountain Addition)	1682	382
USFS	Sanders	McKay Creek	B 1676	6,510
USFS	Ravalli	Schley Mountain (Great Burn)	D 1301	12,600
USFS	Ravalli	Hoodoo (Great Burn)	Q 1301	65,097
USFS	Ravalli	Blodgett Canyon	1061	9,600
USFS	Ravalli	N. Fork, Lost Horse	1062	8,598
USFS	Ravalli	Trapper Creek	1063	2,867
USFS	Ravalli	Nelson Lake	1064	3,233
USFS	Ravalli	Meadow Creek	M 1845	12,600
USFS	Ravalli	Swift Creek	1065	700
USFS	Ravalli	Needle Creek	1066	1,175
USFS	Ravalli	Selway-Bitterroot Addn.	S IBB	12,700
USFS	Beaverhead	North Big Hole	B 1001	7,027
USFS	Deer Lodge	Storm Lake	1427	6,065
USFS	Granite	Quigg (Slide Rock)	Q 1807	60,050
USFS	Beaverhead	West Big Hole	I 1943	56,462
USFS	Beaverhead	East Pioneer (Torey Pk.)	1008	87,746
USFS	Madison, Gallatin	Lionhead	1963	20,899
USFS	Madison, Gallatin	Spanish Peaks	NF 920	63,300
USFS	Park	Republic Mountain (N. Absaroka Addition)	1545	480
USFS	Park	Reef (N. Absaroka Addition)	1914	427
USFS	Carbon	Lost Water	1362	9,500
USFS	Rosebud	Tongue River	1373	16,600
USFS	Missoula, Powell	Great Bear-Bob Marshall Scapegoat-Swan	B 1485	3,825
USFS	Powell, Lewis & Clark	Clearwater-Monture	Q 1485	65,385

* All Acreages Approximate.

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E. Recommendations Pending Before Congress (all agencies) (Continued)

Agency	County(s)	Unit Name	Unit Number	Unit Acreage*
USFS	Lewis & Clark	Park Bridge	U 1485	3,255
USFS	Lewis & Clark	Renshaw	W 1485	25,649
USFS	Lewis & Clark	Leavitt Creek	T 1485	2,400
USFS	Lewis & Clark	Silverking Falls Creek	F 1485	38,300
USFS	Lewis & Clark	Big Log	W 1610	9,272
	TOTAL USFS	Number of Areas 34		681,812

* All Acreages Approximate.

Agency	County(s)	Unit Name	Unit Number	Unit Acreage
USFWS	Garfield	East Seven Blackfoot	FW 923-1	12,184
USFWS	Phillips	Mickey Butte	FW 923-2	17,413
USFWS	Phillips, Valley	Burnt Lodge	FW 923-3	22,976
USFWS	Garfield	Billy Creek	FW 923-4	11,556
USFWS	Garfield	West Seven Blackfoot	FW 923-5	7,096
USFWS	Phillips	Antelope Creek	FW 923-6	5,382
USFWS	Garfield	West Hill Creek	FW 923-7	11,896
USFWS	Petroleum	Fort Musselshell	FW 923-8	8,303
USFWS	Garfield	Sheep Creek	FW 923-9	12,424
USFWS	Phillips	West Beauchamp	FW 923-10	6,736
USFWS	Garfield	Wagon Coulee	FW 923-11	10,528
USFWS	Petroleum	Alkali Creek	FW 923-12	6,592
USFWS	Petroleum	Crooked Creek	FW 923-13	6,842
USFWS	Garfield	East Hell Creek	FW 923-14	15,984
USFWS	Garfield	East Beauchamp	FW 923-15	5,568
	TOTAL USFWS	Number of Areas 15		161,480

Agency	County(s)	Unit Name	Unit Number	Unit Acreage
NPS	Flathead, Glacier	Glacier	NP-915	917,600
NPS	Park, Gallatin	Yellowstone	NP-928	167,060
	TOTAL NPS	Number of Areas 2		1,084,660

F. Other Agency Areas Under Study

Agency	County(s)	Unit Name	Unit Number	Unit Acreage*
USFS	Lincoln	Ten Lakes	1683	33,885
USFS	Lincoln	Mt. Henry	1666	21,000
USFS	Ravalli	Blue Joint Mt.	A 1941	61,400
USFS	Granite, Powell	Flint Range	1428	52,220
USFS	Granite, Powell	Dolus Lake	1429	9,100
USFS	Granite, Ravalli	Sapphires	1421	98,815
USFS	Teton	Deep Creek	P 1485	26,068
USFS	Teton	Reservoir North	H 1485	1,520
USFS	Beaverhead	West Pioneer	1006	147,992
USFS	Madison	Middle Mtn.-Tobacco Roots	B 1013	36,640
USFS	Jefferson, Broadwater	Bullock Hill	A 1620	59,980
USFS	Jefferson, Broadwater	Casey Peak	E 1620	25,000
USFS	Madison, Gallatin	Madison	N 1549	80,057
USFS	Gallatin	Madison	E 1549	105,760
USFS	Madison, Gallatin	Madison S.	S 1549	77,559
USFS	Madison, Gallatin	Madison	R 1549	32,640
USFS	Gallatin, Park	Gallatin Divide	G 1548	81,582
USFS	Gallatin, Park	Hyalite	H 1548	22,268
USFS	Beaverhead	Mt. Jefferson	1962	4,600
USFS	Fergus, Golden Valley	Big Snowies	A,B,S 1739	95,861
USFS	Meagher, Judith Basin	Middle Fork Judith	1734	91,000
USFS	Beaverhead	Italian Peak	I 1945	12,996
USFS	Madison	Madison	J 1549	29,826
	TOTAL USFS	Number of Areas 25		1,207,769

* All Acreages Approximate.

Agency	County(s)	Unit Name	Unit Number	Unit Acreage
NPS	Big Horn	Big Horn Canyon		7,645
	TOTAL NPS	Number of Areas 1		7,645

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G. Ecosystem/Landform Representations of Areas Recommended in this Report

Unit Number	Ecosystem/Landforms Represented by Unit Name: Gramma/Needle-grass/Wheatgrass No. 057	Number of Existing Representations in Statutory Wilderness						Number of Representations in Wilderness Endorsed by the President					
		State		Region		NWPS		State		Region		NWPS	
	Unit Name	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency
MT-067-212	Twin Coulee												
	(1) suitable recommendations	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	(2) nonsuitable recommendations	11	1	11	1	11	1	N/A	15	11	15	11	15
MT-067-206	Pryor Mountain												
	(1) suitable recommendations	N/A	2	N/A	2	N/A	2	N/A	5	N/A	5	N/A	5
	(2) nonsuitable recommendations	N/A	2	N/A	2	N/A	2	N/A	5	N/A	5	N/A	5
MT-067-205	Burnt Timber Canyon												
	(1) suitable recommendations	N/A											
	(2) nonsuitable recommendations	N/A											
MT-067-207	Big Horn Tack-on												
	(1) suitable recommendations	N/A											
	(2) nonsuitable recommendations	N/A											

H. Population Centers Within One Day's Travel of Areas Recommended in This Report

Unit Number	Population Centers Within One Day's Driving Time of Unit Names of Cities and States	Number of Statutory Wilderness Areas Within One Day's Drive of Identified Population Centers		No. of Wilderness Areas Endorsed by the President Within One Day's Drive of Identified Population Centers	
		BLM	Other Agency	BLM	Other Agency
All units	Billings, Montana	N/A	11	N/A	54
	Great Falls, Montana	N/A	18	N/A	71
	Casper, Wyoming	N/A	18	N/A	35

Source: BLM, 1982

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APPENDIX 3.9: METHODOLOGY FOR ASSESSING RANCH RELATED ECONOMIC IMPACTS

This appendix describes the methodology utilized for analyzing the direct effects of increases or decreases in grazing on ranch income and permit values in the RMP area. The impact on ranch income caused by changes in grazing for the 4 representative ranch types was determined through a linear programming model (See below). All income information is calculated from the average budgets developed for the model. Although the term "representative ranch" is used, the region has no real representative ranch. Each operation is unique. The impact on individual ranch income varies by the dependency on BLM grazing, the amount of the change in BLM grazing, the size of the operation, and the way the operator would adjust the ranch operation to changes in grazing.

The first step in the process involved matching each affected allotment in the EIS study area with the respective ranch operation. Some ranch operations have only one BLM grazing allotment, others have two allotments. There is a total of 43 individual ranch operations with BLM grazing privileges in the analysis. Through the use of BLM grazing records and personal knowledge of Billings Resource Area employees, the 43 ranches were placed in 4 size categories (Table 3.23). The predominate type of ranch is a cow/calf operation. Many of the operations also produce cash crops, primarily wheat and barley.

To determine dependency of ranches on BLM grazing, the total AUM grazing requirement for the ranches was computed. This was accomplished by multiplying 8.5 times the total estimated number of animal units (AUs) in each ranch. Eight and one-half was used because it is estimated that, on the average, ranch operations in the EIS study area graze eight and one-half months and feed hay and supplement the other three and one-half months. To determine the percentage of dependency of each operation on BLM grazing, the number of BLM AUMs permitted was divided by the total ranch AUM requirements. Table 3.23 summarizes these determinations: Percentage dependency = BLM AUMs divided by (8.5 months x number of ranch AUs).

The number of livestock on ranches within each size category was averaged. Ranch budgets were constructed for each of the four average herd sizes: 60, 170, 350, and 900.

The Economics and Statistics Service (USDA, ESS) developed the representative budgets, using, in part, budget data gathered in a national cost of production study in 1979. The budgets were originally developed for the Prairie Potholes EIS which covered northern Montana east of Glacier National Park. Tables 1 through 5 summarize the representative livestock budgets. A linear programming model was developed by ESS for each of four livestock sizes. The linear programming model maximizes ranch income based on a series of production parameters and constraints. To determine the economic impacts on the ranch, the level of BLM grazing was varied (increased or decreased) according to the proposed change in BLM AUMs under each alternative.

It was assumed that the most likely response of ranchers to changes in BLM AUMs would be to adjust the size of the ranch operation. It is, of course, very difficult to project how individual ranchers would adjust their operations given a change in BLM AUMs. Each ranch operation is unique, and the adjustment by each rancher to a change in BLM AUMs would probably vary somewhat. Small ranches would probably be less likely to reduce the size of their operations and would probably attempt to lease other grazing, for example, to compensate for the loss of BLM grazing. If BLM increased the number of AUMs, ranchers would not necessarily increase the size of their cow/calf operations. They might extend their grazing season, for example. Notwithstanding these problems, it was decided that adjusting the size of the cow/calf operations would represent the most likely response to a change in BLM AUMs.

The impact on ranch income is measured only in terms of change in the number of BLM AUMs. It is acknowledged that where an AMP is involved, there may be changes in ranch returns associated with the quality of grazing, watering facilities, etc., that do not directly relate to the change in quantity of AUMs. Through vegetation manipulation, fencing, water development, and rest rotation grazing on BLM land, a ranch operator could benefit from the production of heavier calves, an increase in the calf crop, and possibly even a reduction in death losses. Some of these benefits have been noted by W. Gordon Kearl (1973) and Kothmann (1970). It is entirely possible that a range operator, even though he reduces the size of his herd, could end up selling more pounds of beef in the fall because of the benefits from implementation of an AMP. Not enough data are available at this time in the study area to conclusively quantify the extent of these additional ranch returns due to AUM quality so they were not evaluated in the analysis.

Implementation of grazing systems would increase the cost to ranch operations in such areas as increased fence maintenance, more movement of livestock and increased effort in monitoring forage conditions. These costs are included in the budget models.

Using the linear programming model, then, the change in ranch income (gross receipts above cash costs and depreciation), was calculated given a change in BLM AUMs. Since, in the study area, private and state lands are intermingled with BLM lands, a reduction in BLM grazing can cause a reduction in private and state grazing. During the time that BLM lands are being grazed, BLM lands contribute on the average about two-thirds of the grazing whereas state and private lands contribute about one-third. Therefore, in the calculations, grazing on state and private lands are reduced proportionally. Increase in BLM AUMs is not accompanied with a proportional increase in state and private AUMs since BLM does not know that grazing would be increased on these lands. Tables 6 through 9 summarize the income increases/decreases giving various increases/decreases in BLM AUMs.

Ranchers, BLM appraisers and the Federal Land Bank estimate that an average value for BLM grazing permits in the intensive study area is approximately $100 per AUM. For those ranchers that have purchased BLM permits at $100 per AUM or $1,200 per AU, it is possible to calculate the price they are paying for BLM AUMs. Using an opportunity cost of capital of 9.3%, the cost of owning the BLM permit is $9.30 per AUM. Adding the grazing fee of $2.36 results in a total price per AUM of $11.66.

The economic analysis uses average livestock prices for 1977, 1978 & 1979. Cost figures are for 1979. Historically, livestock prices have changed dramatically every three to five years, whereas production costs have risen consistently. A point could be raised as to the validity of using these figures to project economic impacts into the future. It has been assumed in this analysis that the cost/price relationship would remain fairly constant over the long term, with upward pressure on both costs and prices due to economy-wide inflation. Therefore, although the magnitude of the figures will increase the relative impact would remain constant.

Source: BLM, 1982

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APPENDIX 4.1: METHODOLOGY FOR GRAZING MANAGEMENT

1. Vegetation Allocation - Initial allocations in the Existing, High and Preferred Alternatives are the current stocking rate. In "I" allotments, the stocking rate would be verified or adjusted based on monitoring of actual use and utilization together with data from the soil and vegetation inventory. The objective of monitoring would be to arrive at a stocking level where 50% of the forage produced in an average year would not be utilized. This level of grazing allows for plant maintenance and improvement under a planned system of grazing management.

All calculations for AUM increases are from SCS stocking guides (SCS Montana Grazing Guides, Zocek et al., undated). Range site and condition data from the inventory area (which included the Pryor Mountain Wild Horse Range and allotments where management actions are proposed) was used to determine current grazing capacities for each inventoried allotment (See Appendix 3.1 for details of grazing management responses of the various range sites). This information developed by range conservationists and soil scientists was used to determine the acres that would improve in condition and from the acreage improved, the increased AUMs were determined using the SCS grazing capacities for the range sites.

The calculation process is summarized below.

a. Delineate range sites.

b. Assign ecological condition to each site.

c. Determine acres that have a slow or extremely slow response to grazing management because of soil limitations.

d. Determine acres with slow or extremely slow response time because of poor vegetative condition.

e. Calculate SCS stocking rate for each range site by precipitation zone and condition.

f. Add up acres that would improve one condition class in the long term and determine the SCS recommended rate at the improved level of range condition.

g. For burning and chiseling projects, condition calculations were based on changes from poor and low-fair condition to high-good and excellent condition. At least a doubling of forage production occurs with this improvement in range condition. AUM calculations for crested wheatgrass renovations were simply doubling of current AUMs.

2. Grazing Treatments - Grazing treatments and systems would vary depending on the allotment situation and management needed to reach resource objectives of an alternative. The objectives of the High Level and Preferred Alternatives emphasize improvement of key use areas. Such improvement would only result from systematic deferment and/or rest treatments and in some cases, vegetation manipulation practices.

3. Vegetation Manipulation Treatments - All such treatments would be coordinated with the Montana Department of Fish, Wildlife and Parks according to interagency agreement. Grazing management practices would allow for establishment and maintenance of treated areas.

The following guide has been developed by BLM Soil Scientists, and other specialists, for use on Montana and Dakota public lands.

Mechanical treatments may be considered as an alternative method of increasing vegetative production and improving watershed condition. Treatment feasibility should be considered where grazing management systems cannot reach desired goals in a realistic time.

Factors in influencing feasibility of treatments are: (1) soil properties, (2) existing plant community; (3) objectives of treatment, (4) anticipated response from treatment, (5) economics, (6) availability of equipment and (7) conditions that influence operation of equipment.

The objectives of mechanical treatment should be carefully analyzed. It may be desirable to: (1) change existing vegetation (i.e., reduce clubmoss-blue grama dominance) and/or (2) correct a soil problem (i.e., breakup a claypan or a compacted layer). Vegetation can be changed to improve range condition or to maximize production. Treatment should be selected to best reach the desired objective.

When it has been determined that management of livestock cannot reach the desired improvement in vegetation, suitability for mechanical treatment can be determined by considering: (1) soil properties and (2) conditions that influence operation of equipment. To use the table, first consider each factor in the left column independent of others, than consider interrelated factors to reach a final rating. These are evaluated in the following table.

Revelant conditions not evaluated in the table must also be considered. For example, kinds of bedrock (i.e., consolidated, fractured, etc.) will influence suitability for mechanical treatments. Aspect will influence the amount of moisture available for plant use.

Treatment effect upon water infiltration and runoff is an important consideration. Many treatments will increase infiltration and reduce runoff; but, less runoff may not be desirable in cases where downstream use of water has a higher priority.

In addition to the foregoing interpretation guide on the suitability of soils and related factors for rangeland mechanical treatment, it may be helpful to consider the selection of land treatment according to range sites.

The following table shows the type of treatment (mechanical, burning or chemical) suited to correct common soil or vegetation problems found on certain range sites. Where two or more vegetation or soil problems are present (dense sageburh on claypan soils) select the treatment that will solve both problems; the claypan problem can't be reduced just by burning sagebrush. Range sites not shown in the table are generally unsuited to mechanical treatments.

Note that vegetative changes can be accomplished with fire, chemicals or a surface layer treatment (i.e., chiseling) but to correct a subsoil problem may require a deeper treatment (i.e., furrowing or ripping).

Additional factors must be considered to determine the final suitability of a site for mechanical threatment. These factors are in the foregoing section on rating soils properties and related factors. The narrative discusses objectives of a treatment.

Finally, land treatments cannot be considered an alternative to good management practices, but will require a high level of management following the treatments.

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A. Sagebrush burning - See Appendix 4.9 (Methodology for Controlled Burns).

B. Mechanical treatments of blue grama sites - Chiseling and discing are proposed methods to break up blue grama sod. These treatments would be done generally on the contour on slopes less than 12%. Treated areas would be large enough to manage as a unit to insure even utilization. Roads and trails would not be disturbed and reservoir watershed areas would not be treated where such treatment would cause the reservoir to dry up.

C. Crested wheatgrass interseeding - Interseeding of alfalfa is proposed for some crested wheatgrass areas. This could be accomplished by contour furrowing, contour scalping, or chiseling with interseeding. Such treatments would greatly increase the productivity of poor crested wheatgrass stands. Treated areas would be large enough to manage as a unit. Roads and trails would not be disturbed, and reservoir watershed areas would not be treated where such treatment would cause the reservoir to dry up.

D. Noxious weed control - Noxious weed control would be done under the supervision of a certified pesticide applicator in accordance with all applicable standards and requirements established by Federal and State regulatory agencies for the use of the pesticides.

4. Facilities

A. Fences - Fences would be 3 or 4 wire (barbed) antelope type fence, in accordance with BLM Manual 1737.

B. Water sources - Wells, springs, pipelines, water savers, reservoirs and pits are the various water sources that could be developed. As a general guide, water source per section would be provided.

All newly constructed watering sources for livestock will be modified for use by wildlife. All new reservoirs will be evaluated for the potential installation of waterfowl nesting islands.

Source: BLM, 1982

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APPENDIX 4.2: METHODOLOGY FOR RATING GRAZING MANAGEMENT RESPONSE

These guidelines rate the potential speed of vegetative response, in different soil groupings, resulting from effective livestock management systems. They may be used by range conservationists and other specialists to develop AMP objectives based on soil potentials, provide the needed information for benefit/cost analyses, which are of particular concern under the new Rangeland Improvement Policy. The response ratings are based on BLM and SCS soil scientists' knowledge of the soils of Montana and range conservationists' experience with monitoring AMPs.

Rates of response are defined as follows:

Rapid - Significant improvement in 3 to 5 years.
Moderate - Will improve to next condition class in 5 to 15 years.
Slow - Minor improvement in 15 years.
Extremely slow - No significant improvement in 15 years.

Soil factors affecting response are texture, structure, flooding frequency and duration, drainage class, soluble salts, sodium adsorption ratio, coarse fragments, slope, and topography. Other factors affecting response are varying climatic conditions, the type of grazing animal, distribution, season of use, grazing system, present and desired vegetative type, and range condition.

These management response ratings may be amended (up or down) due to site-specific factors. For example, response will be slower where vegetation such as blue grama, clubmoss, dense sagebrush, or woodland canopy is present. These limiting factors can reduce the expected response by one or more categories. Range in poor condition will normally respond more slowly than that in fair or good condition due to low vigor, and lack of seed source. If the site is in excellent condition ground cover, production, and vigor can increase. Knowledge of local map units and vegetation will be required to make these choices.

The following are descriptions of the varying soil characteristics and range sites that determine the rate of vegetative response. Because of variations in soil characteristics within range sites, a number of range sites are designated in more than one response category. It may be necessary to have the assistance of a soil scientist to make the correct determination in these cases.

Rapid vegetative response:

1. All soils receiving common flooding of brief or long duration; well drained to very poorly drained soils with soluble salts less than 8 mmhos per centimeter (mmhos), and in poor or excellent range condition. This group includes soils in the wet meadow, subirrigated, saline lowland, and overflow range sites.

2. Sand and loamy sand textures; single grain or weak blocky or weak prismatic structure; in fair to excellent range condition. This group is the sands range site.

3. Clay, silty clay, and sandy clay textures, granular surface and blocky or prismatic subsoil; soluble salts less than 4 mmhos, sodium adsorption ratio (SAR) less than 4; in fair to excellent range condition, except when dense sagebrush limits grass seedling establishment. Included in this group are soils in the clayey, thin clayey, coarse clay, and shallow clay range sites.

Moderate vegetative response:

1. Deep and moderately deep soils with fine sandy loam surface layers; soluble salts less than 4 mmhos and SAR less than 4. This is the sandy range site.

2. Deep and moderately deep soils with loam surface layers and loamy or clayey subsoils, of moderate permeability and salts less than 4 mmhos and SAR less than 4. If dominated by blue grama or blue grama-clubmoss, response will be slow. This is the silty range site.

3. Deep, clayey soils on fans and low terraces with a very thin (1/2-2 inches thick) loamy surface (the A1 layer). Response will be slow when these soils are dominated by sagebrush and/or blue grama. Includes some soils in the clayey range site.

4. Strongly calcareous, loamy or loamy-skeletal soils on terraces and fans with low or moderate available water of 3.75 to 7.5 inches per 5 foot profile, or to limiting layer. Included in this group are soils in the silty-stony and shallow to gravel range sites.

5. Shallow to deep calcareous soils on moderately steep to steep landscapes with loamy or clayey texture. Included in this group are soils in the thin sandy, thin silty, thin clayey, shallow, and shallow clay range sites.

Slow vegetative response:

1. Claypan soils with very thin loamy surface layer (<5 inches thick) over dense claypan subsoil; moderately well drained with soluble salts between 4 and 16 mmhos and SAR 8 to 12. This includes soils in the claypan range site.

2. Claypan soils with loamy surface layers (<8 inches thick) and clayey columnar subsoils, on well drained landscapes. This includes soils in the claypan range site.

3. Clay or silty clay soils with soluble salts between 8 and 12 mmhos, SAR 8 to 12 on well drained landscapes. Much of the area may have massive structure in the surface layer. This includes soils in the dense clay and saline upland range sites.

4. Very gravelly and extremely gravelly loamy soils with very low available water capacity of less than 3.75 inches of water in a 5 foot profile. This is the gravel range site.

5. Very strongly calcareous loamy or loamy-skeletal soils with low fertility. This group includes soils in the clayey-limy, silty-limy shallow-limy and very shallow-limy range sites.

Extremely slow vegetative response:

1. Fine and moderately fine textured surface with massive structure. This includes some soils in the dense clay range sites.

2. All soils with salts exceeding 16 mmhos and/or SAR above 12; well drained or moderately well drained. This includes some soils in the saline upland range site.

Note: The badlands, panspots, thin breaks, limy, and shale range sites refer to landscapes and not soils. Base response projections on component soils in these areas.

Source: BLM, 1982

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TABLE 1

Cost and Return Summary with interest on land as a cash cost

Item	Herd Size			
	60	170	350	900
Gross Income	16,909	48,082	98,332	252,672
Total Cash Costs*	12,279	32,753	64,804	164,120
Family Labor	2,341	5,464	12,000	17,028
Return Above Cash Costs	4,630	15,329	33,528	88,552
Return Above Cash Costs & Family Laobr	2,289	9,865	21,528	71,524
Return to Total Investment 1/	505	5,198	12,501	48,263
Return to Land 2/	-3,250	-5,113	-8,409	-5,521

*includes interest on real estate loan based on $500/AU and interest at 9.3%
1/ Return Above Cash Cost & Family Labor minus depreciation
2/ Return to Total Investment minus interest on Investment other than Land

Source: ESS, 1980.

TABLE 2

Representative Ranch Budget — 0-100 Cows

	Unit	Number	Average Weight	Price/ Cwt	Total Value
Sales:					
Steer Calves	Head	24	450	71.23	7,693
Heifer Calves	Head	15	410	62.82	3,863
Feeder Steers	Head	3	725	59.02	1,284
Cull Cows	Head	11	1,000	36.99	4,069
Total					16,909
Total/Cow					281.82

	Total Value	Value/ Head
Cash Costs:		
BLM Permit	301	5.02
State Lease	30	.50
Private Lease	648	10.80
Grazing Association	90	1.50
Hay (Prod)	2,944	49.07
Hay (Purch)	539	8.98
Barley (Prod)	94	1.57
Protein Supp.	173	2.88
Salt & Minerals	160	2.66
Vet. & Medicine	317	5.29
Trucking	98	1.64
Marketing	266	4.44
Hired Labor	149	2.49
Machine Fuel & Labor	855	14.25
Machine Repair	880	14.67
Equipment Fuel & Lube	146	2.44
Equipment Repair	185	3.09
Land Tax	499	8.31
Other Tax	108	1.80
Insurance	94	1.56
General Farm Overhead	491	8.18
Interest on Oper. Capital	422	7.03
Total	9,489	158.15
Other Costs:		
Family Labor	2,341	39.02
Depreciation	1,784	29.73
Interest on Investment other than Land	3,755	62.58
Interest on Land Investment	10,091	168.18
Total	17,971	299.51
Total all Costs	27,460	457.66
Return above Cash Costs	7,420	123.67
Return above Cash Costs & Family Labor	5,079	84.65
Return to Total Investment	3,295	54.92
Return to Land Investment	-460	-7.67

Production Assumptions: Herd size 60 cows; 95% calf crop; 5% calf death loss to weaning; 25 cows per bull; 20% replacement rate; 2% cow loss.

Source: ESS, 1980.

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TABLE 3

Representative Ranch Budget — 101-249 Cows

	Unit	Number	Average Weight	Price/ Cwt	Total Value
Sales:					
Steer Calves	Head	69	450	71.23	22,117
Heifer Calves	Head	43	410	62.82	11,075
Feeder Steers	Head	8	725	59.02	3,423
Cull Cows	Head	31	1,000	36.99	11,467
Total					48,082
Total/Cow					282.84

	Total Value	Value/ Head
Cash Costs:		
BLM Permit	722	4.25
State Lease	39	.23
Private Lease	1,422	8.37
Grazing Assoc.	248	1.46
Hay (Prod)	8,384	49.32
Hay (Purch)	1,576	9.27
Barley (Prod)	266	1.57
Protein Suppl	490	2.88
Salt & Minerals	451	2.65
Vet. & Medicine	903	5.31
Trucking	332	1.95
Marketing	697	4.10
Hired Labor	746	4.39
Machine Fuel & Lube	1,513	8.90
Machine Repair	1,338	7.87
Equipment Fuel & Lube	253	1.49
Equipment Repair	502	2.95
Land Tax	1,464	8.61
Other Tax	262	1.54
Insurance	723	4.25
General Farm Overhead	1,255	7.38
Interest on Oper. Capital	1,262	7.42
Total	24,848	146.17
Other Costs:		
Family Labor	5,464	32.14
Depreciation	4,667	27.45
Interest on Investment other than Land	10,311	60.65
Interest on Land Investment	34,005	200.03
Total	54,447	320.27
Total all costs	79,295	466.44
Return above Cash Costs	23,234	136.67
Return above Cash Costs & Family Labor	17,770	104.53
Return to Total Investment	13,103	77.08
Return to Land Investment	2,792	16.42

Production Assumptions - herd size 170 cows; 95% calf crop; 5% calf death loss to weaning; 25 cows per bull; 20% replacement rate; 2% cow loss.

Source: ESS, 1980.

TABLE 4

Representative Ranch Budget — 250-499 Cows

	Unit	Number	Average Weight	Price/ Cwt	Total Value
Sales:					
Steer Calves	Head	142	450	71.23	45,51[illegible]
Heifer Calves	Head	88	410	62.82	22,66[illegible]
Feeder Steers	Head	16	725	59.02	6,84[illegible]
Cull Cows	Head	63	1,000	36.99	23,30[illegible]
Total					98,33[illegible]
Total/Cow					280.9[illegible]

	Total Value	Value/ Head
Cash Costs:		
BLM Permit	1,856	5.30
State Lease	222	.63
Private Lease	819	2.34
Grazing Assoc.	510	1.46
Hay (Prod)	17,450	49.86
Hay (Purch)	3,203	9.15
Barley (Prod)	545	1.56
Protein Supp.	1,009	2.86
Salt & Minerals	945	2.70
Vet. & Medicine	1,676	4.79
Trucking	473	1.35
Marketing	592	1.69
Hired Labor	3,262	9.32
Machine Fuel & Lube	2,331	6.66
Machine Repair	2,335	6.67
Equipment Fuel & Lube	585	1.67
Equipment Repair	1,047	2.99
Land Tax	2,919	8.34
Other Tax	473	1.35
Insurance	1,470	4.20
General Farm Overhead	2,342	6.69
Interest on Oper. Capital	2,465	7.04
Total	48,529	138.65
Other Costs:		
Family Labor	12,000	34.29
Depreciation	9,027	25.79
Interest on Investment other than Land	20,910	59.74
Interest on Land Investment	69,034	197.24
Total	110,971	317.06
Total all costs	159,500	455.71
Return above Cash Costs	49,803	142.29
Return avoe Cash Costs & Family Labor	37,803	108.01
Return to Total Investment	28,776	82.22
Return to Land Investment	7,866	22.47

Production Assumptions - herd size 350 Cows; 95% Calf Crop; 5% calf death loss; 20 cows per bull; 20% replacement rate; 2% cow loss.

Source: ESS, 1980.

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TABLE 5

Representative Ranch Budget — 500+ Cows

	Unit	Number	Average Weight	Price/ Cwt	Total Value
Sales:					
Steer Calves	Head	365	450	71.23	116,995
Heifer Calves	Head	226	410	62.82	58,209
Feeder Steers	Head	41	725	59.02	17,544
Cull Cows	Head	162	1,000	36.99	59,924
Total					252,672
Total/Cow					280.75

	Total Value	Value/ Head
Cash Costs:		
BLM Permit	3,727	4.14
State Lease	202	.22
Private Lease	1,278	1.42
Grazing Association	1,305	1.45
Hay (Prod)	44,774	49.75
Hay (Purch)	8,239	9.15
Barley (Prod)	1,410	1.57
Protein Supp.	2,595	2.88
Salt & Minerals	2,430	2.70
Vet. & Medicine	4,311	4.79
Trucking	1,215	1.35
Marketing	1,521	1.69
Hired Labor	8,388	9.32
Machine Fuel & Lube	5,994	6.66
Machine Repair	6,003	6.67
Equipment Fuel & Lube	1,503	1.67
Equipment Repair	2,691	2.99
Land Tax	7,506	8.34
Other Tax	1,215	1.35
Insurance	3,780	4.20
General Farm Overhead	6,021	6.69
Interest on Oper. Capital	6,212	6.90
Total	122,320	135.91
Other Costs:		
Family Labor	17,028	18.92
Depreciation	23,211	25.79
Interest on Investment other than Land	53,784	59.76
Interest on Land Investment	208,008	231.12
Total	302,031	335.59
Total all Costs	424,351	471.50
Return above Cash Costs	130,352	144.84
Return above Cash Costs & Family Labor	113,324	125.92
Return to Total Investment	90,113	100.13
Return to Land Investment	36,329	40.37

Production Assumptions - Herd size 900 cows; 95% calf crop; 5% calf death loss to weaning; 20 cows per bull; 20% replacement rate; 2% cow loss.

Source: ESS, 1980.

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TABLE 6

TABLE 6-- Ranch Income Decreases less than 100 cows

Item		Percent reduction									
	no change	5	10	15	20	25	30	35	40	45	50
					Dollars						
Gross income	16,974	16,596	16,214	15,837	15,457	15,075	14,673	14,294	13,911	13,534	13,187
Total cash costs	12,355	12,071	11,785	11,502	11,217	10,969	10,722	10,488	10,252	10,019	9,807
Value of family labor	2,350	2,298	2,245	2,193	2,140	2,087	2,032	1,979	1,926	1,874	1,826
Depreciation	1,785	1,777	1,769	1,761	1,753	1,745	1,736	1,728	1,721	1,712	1,705
Interest on investment other than land	3,767	3,698	3,628	3,560	3,490	3,421	3,348	3,279	3,209	3,141	3,078
Return above:											
Cash costs	4,619	4,525	4,429	4,335	4,240	4,106	3,951	3,806	3,659	3,515	3,380
Cash costs and family labor	2,269	2,227	2,184	2,142	2,100	2,019	1,919	1,827	1,733	1,641	1,554
Return to total investment	484	450	415	381	347	274	183	99	12	71	151
Return to land	-3,283	-3,248	-3,213	-3,179	-3,143	-3,147	-3,165	-3,180	-3,197	-3,212	-3,229
Herd size	60.2	58.9	57.5	56.2	54.8	53.5	52.1	50.7	49.4	48.0	46.8

Source: ESS, 1980.

TABLE 6 --(cont) Ranch Income Increases less than 100 cows

Item	Percent Increase		
	5	10	15
		Dollars	
Gross income	17,304	17,638	17,969
Total cash costs	12,636	12,921	13,204
Value of family labor	2,396	2,442	2,488
Depreciation	1,792	1,800	1,807
Interest on investment other than land	3,827	3,888	3,948
Return above:			
Cash costs	4,668	4,717	4,765
Cash costs and family labor	2,272	2,275	2,277
Return to total investment	480	475	470
Return to land	-3,347	-3,413	-3,478
Herd size	61.4	62.6	63.8

Source: ESS, 1980.

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TABLE 7 -- Ranch Income Decreases 100-249 cows

Item		Percent reduction									
	no change	5	10	15	20	25	30	35	40	45	50
					Dollars						
Gross income	47,939	47,078	45,967	45,067	44,143	43,243	42,343	41,208	40,308	39,384	38,484
Total cash costs	32,700	32,093	31,303	30,666	30,013	29,376	28,343	28,190	27,673	27,144	26,628
Value of family labor	5,448	5,350	5,223	5,122	5,017	4,914	4,812	4,683	4,581	4,476	4,374
Depreciation	4,664	4,645	4,622	4,603	4,584	4,564	4,545	4,521	4,502	4,483	4,463
Interest on investment other than land	10,286	10,132	9,932	9,771	9,605	9,444	9,282	9,079	8,918	8,752	8,591
Return above:											
Cash costs	15,239	14,985	14,664	14,401	14,130	13,867	13,500	13,018	12,635	12,240	11,856
Cash costs and family labor	9,791	9,635	9,441	9,279	9,113	8,953	8,688	8,335	8,054	7,764	7,482
Return to total investment	5,127	4,990	4,819	4,676	4,529	4,389	4,143	3,814	3,552	3,281	3,019
Return to land	-5,159	-5,142	-5,113	-5,095	-5,076	-5,055	-5,139	-5,265	-5,366	-5,471	-5,572
Herd size	169.9	166.5	162.5	159.4	156.1	152.9	149.7	145.7	142.5	139.3	136.1

Source: ESS, 1980.

TABLE 7 --(cont) Ranch Income Increases 100-249 cows

Item	Percent Increase		
	5	10	15
		Dollars	
Gross income	48,756	49,500	50,244
Total cash costs	33,366	33,973	34,580
Value of family labor	5,541	5,625	5,710
Depreciation	5,681	4,697	4,713
Interest on investment other than land	10,432	10,566	10,699
Return above:			
Cash costs	15,390	15,527	15,664
Cash costs and family labor	9,849	9,902	9,954
Return to total investment	4,168	5,205	5,241
Return to land	-6,264	-5,361	-5,458
Herd size	172.4	175.0	177.7

Source: ESS, 1980.

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TABLE 8 -- Ranch Income Decreases 250-499 Cows

Item	no change	Percent reduction									
		5	10	15	20	25	30	35	40	45	50
					Dollars						
Gross income	98,249	96,727	93,930	91,573	89,401	87,253	85,106	82,934	80,577	78,405	76,258
Total cash costs	64,740	63,661	61,665	59,984	58,441	57,086	55,846	54,598	53,236	51,987	50,747
Value of family labor	11,991	11,806	11,464	11,176	10,911	10,649	10,387	10,122	9,834	9,569	9,307
Depreciation	9,025	8,984	8,909	8,847	8,789	8,731	8,674	8,616	8,553	8,495	8,438
Interest on investment other than land	20,895	20,619	20,113	19,687	19,294	18,905	18,516	18,123	17,697	17,304	16,915
Return above:											
Cash costs	33,509	33,066	32,265	31,589	30,960	30,167	29,260	28,336	27,341	26,418	25,511
Cash costs and family labor	21,518	21,260	20,801	20,413	20,049	19,518	18,873	18,214	17,507	16,849	16,204
Return to total investment	12,493	12,276	11,892	11,566	11,260	10,787	10,199	9,598	8,954	8,354	7,766
Return to land	-8,402	-8,343	-8,221	-8,121	-8,034	-8,118	-8,317	-8,525	-8,743	-8,950	-9,149
Herd size	349.7	344.2	334.3	325.9	318.2	310.6	302.9	295.2	286.8	279.1	271.4

Source: ESS, 1980.

TABLE 8. (cont.) Ranch Income Increases 250-499 Cows

Item	Percent Increase		
	5	10	15
		Dollars	
Gross income	100,210	102,171	104,373
Total cash costs	66,343	67,946	69,[illegible]
Value of family labor	12,231	12,470	12,[illegible]9
Depreciation	9,077	9,129	9,188
Interest on investment other than land	21,250	21,605	22,[illegible]
Return above:			
Cash costs	33,367	34,225	34,[illegible]
Cash costs and family labor	22,636	21,755	21,890
Return to total investment	12,559	12,626	12,702
Return to land	-8,691	-8,979	-9,302
Herd size	356.7	363.7	371.5

Source: ESS, 1980.

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TABLE 9 -- Ranch Income Decreases 500+ Cows

Item		Percent reduction									
	no change	5	10	15	20	25	30	35	40	45	50
					Dollars						
Gross income	252,200	247,067	242,079	236,884	231,920	226,932	221,736	216,749	211,553	206,566	201,394
Total cash costs	163,916	160,288	156,766	153,093	149,587	146,065	143,085	140,240	137,272	134,427	131,473
Value of family labor	16,996	16,650	16,313	15,963	15,629	15,293	14,943	14,606	14,256	13,920	13,572
Depreciation	23,198	23,061	22,928	22,789	22,656	22,523	22,384	22,251	22,112	21,979	21,841
Interest on investment other than land	53,697	52,767	51,863	50,922	50,023	49,119	48,178	47,275	56,333	45,430	44,493
Return above:											
Cash costs	88,284	86,779	85,313	83,791	82,333	80,867	78,651	76,509	74,281	72,139	69,921
Cash costs and family labor	71,288	70,129	69,000	67,828	66,704	65,574	63,708	61,903	60,025	58,219	56,349
Return to total investment	48,090	47,068	46,072	45,039	44,048	43,051	41,324	39,652	37,913	36,240	34,508
Return to land	-5,607	-5,699	-5,791	-5,883	-5,975	-6,068	-6,854	-7,623	-8,420	-9,190	-9,985
Herd size	898.3	880.0	862.2	843.7	826.0	808.3	789.8	772.0	753.5	735.7	717.3

Source: ESS, 1980.

TABLE 9 --(cont) Ranch Income Increases 500+ Cows

Item	Percent Increase		
	5	10	15
		Dollars	
Gross income	256,194	260,359	264,279
Total cash costs	167,182	170,588	173,794
Value of family labor	17,265	17,545	17,809
Depreciation	23,305	23,416	23,521
Interest on investment other than land	54,420	55,175	55,885
Return above:			
Cash costs	89,012	89,771	90,485
Cash costs and family labor	71,747	72,226	72,676
Return to total investment	48,442	48,810	49,155
Return to land	-5,978	-6,365	-6,730
Herd size	912.5	927.3	941.3

Source: ESS, 1980.

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APPENDIX 4.3: METHODOLOGY FOR WILD HORSE MANAGEMENT

Monitoring

Habitat

A monitoring plan will be developed to assure the objectives of the RMP and Herd Area Management Plan (HAMP) are being accomplished. Coordinated monitoring will take place to measure the compatibility of wild horses, mule deer, bighorn sheep, and the effects of management practices on each of their habitats.

The methods utilized will be established practices for collecting information to determine habitat condition and the trend of condition. These methods will be applied according to established standards contained in BLM Manual sections 4400 and 6600.

Wild Horses

Information will continue to be collected on the population numbers and social structure. This will be done by separate herd area. The information will be collected primarily by visual observation, recorded and filed in the Billings Resource Area Office's central files system, section 4700.

Range Improvements

Fences

Constructed fences will be built to minimize the effects on movement of wildlife. The five miles of boundary fence would be a standard five wire (barbed) fence with steel and wood posts. Internal cross fences and wing fences would be a three wire (barbed) with steel and wood posts. The spacing on the wire, measured from the ground up, would be 24 inches, 12 inches, and 12 inches. Fences will be built in accordance with BLM Manual 1737.

An effort will be made to locate all internal fences so minimal visual detraction occurs.

All wild horse range improvements proposed for installation within the recommended wilderness areas in the Pryor Mountains will undergo a wilderness clearance by range and wilderness specialists prior to installation.

Water

Watersavers, also known as artificial catchments, are the basic method to improve the water supply on the PMWHR.

The watersavers will be installed so access to water by wild horses can be controlled. This will provide an opportunity to obtain better grazing distribution by wild horses and seasonal deferment of grazing to improve range condition.

The installation of the watersavers will be designed so wildlife can have access to water when water is not available to wild horses, if this is a management objective.

Source: BLM, 1982

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Monitoring - Terrestrial

Wildlife terrestrial habitat monitoring will be accomplished in close coordination with the range management monitoring program which assesses ecological range condition. Monitoring efforts are designed to provide wildlife habitat condition data, wildlife species occurrence and population trends. All monitoring and followup analysis will focus on key habitat areas and high population concentration areas.

Monitoring of big game habitats and high population concentration areas will be accomplished through the use of permanent vegetation transects (i.e., line-intercept; 3-step point transects; Daubenmire transects), pellet group counts and occular species observation counts. Species observation counts will be done in close coordination with the Montana Department of Fish, Wildlife and Parks (MDFW&P) and conducted both on the ground and with the use of aircraft.

Monitoring of upland game bird habitat will be accomplished through the use of permanent vegetation transects (i.e., line-intercept transects; Daubenmire transects) located in wintering and nesting habitats adjacent to located mating grounds. Mating grounds will be located utilizing aerial photographs, ground and aerial observations and MDFW&P data.

Monitoring of waterfowl habitat and use will be accomplished through the use of permanent vegetative transects (i.e., Daubenmire transects) and occular species counts on selected reservoirs within known high concentration areas. Followup surveys for nesting success and brood numbers will be conducted on each selected reservoir in cooperation with the MDFW&P.

Monitoring for threatened and endangered species habitat and occurrence will be done in accordance with:

A. Black-footed ferret: Montana Instruction Memorandum No. MT-81-163, Change 1 and BLM Technical Note, Habitat Management Series for Endangered Species, Report No. 2.

B. Bald eagle: BLM Technical Note, Habitat Management Series for Endangered Species, Report No. 5.

C. Peregrine falcon: BLM Technical Note, Habitat Management Series for Endangered Species, Report No. 1.

Monitoring of nongame mammal and bird habitats and species occurrence data will be collected in accordance with:

A. Mammals: Department of Natural Resource publication, Circle West Wildlife Baseline Study, pp. 34-39.

B. Birds: U.S. Fish and Wildlife Service publication FWS/OBS-80/58, Field Guidelines for Using Transects to Sample Nongame Bird populations.

All wildlife habitat data and population numbers collected will be recorded and filed in accordance with BLM Manual 6602 guidelines.

Monitoring - Aquatic

Monitoring of all aquatic habitats will be done in accordance with guidelines presented in BLM Technical Note No. 283, Techniques for Conducting Stream Habitat Surveys on National Resource Land and BLM manuals for reservoir and lake surveys.

(Copies of referenced manuals, studies, publications, instruction memorandums, and technical notes are located in the Resource Area Office.)

Structural Improvements

A. Upland game bird watering devices: All watering devices will be constructed in accordance with designs and guidelines presented in the Wildlife Society, publication Wildlife Habitat Improvement Techniques, pp. 369-375.

B. Waterfowl nesting islands: All islands will be constructed in accordance with guidelines presented in BLM Technical Notes Nos. 260 and 327; Waterfowl Nesting Island Development and Construction and Management of Stockponds for Waterfowl, respectively.

C. Fencing: All fencing will be constructed in accordance with standards identified in BLM Manual 1737.

D. Raptor nest sites: All raptor nest sites will be constructed in accordance with guidelines presented in BLM Technical Note #345, Raptor Management - the State of the Art in 1980.

E. Fishing ponds: All ponds will be constructed in accordance with standards outlined in the Lewistown District Water Resources Programmatic Environmental Analysis Record, the Lewistown District Wildlife Development Projects Environmental Analysis Record and MDFW&P guidelines.

Non-Structural Improvements

Planting of all dense nesting cover that is proposed (25 acres) will be accomplished utilizing a broadcast procedure. The recommended seed mixture will be 2 pounds of dryland alfalfa and 10 pounds of tall and pubescent wheatgrass per acre.

Source: BLM, 1982

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APPENDIX 4.5: METHODOLOGY OF TIMBER MANAGEMENT

All timber harvesting will be under the constraints of the Lewistown District Programmatic EAR on Small Sales of Forest Projects number MT-060-06-8-18. This document is on file in the Billings Resource Area Office.

Source: BLM, 1978

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APPENDIX 4.6: METHODOLOGY USED TO DETERMINE IMPACTS TO VISUAL RESOURCES

Impacts to visual quality are determined through analysis of allowable management actions within the five visual management classes as they are defined in Bureau Manual 8400. Projects are analyzed in terms of their potential to create the following types of effects:

A. Ground disturbance, including roads and trails constructed for access and/or maintenance of the project.

B. Creation of structures not homogenous to the visual scene.

C. Color changes which may occur from vegetative manipulations. This could be either removal of native vegetation or the introduction of additional non-native vegetation.

D. Livestock concentration around reservoirs and other water sources and associated grazing impacts of compaction, trailing and erosion.

Each type of impact is evaluated as to whether or not it would create a high, moderate or low contrast if it were done in each one of the four visual class landscapes. High contrasts would be created by those landscape changes that demand attention. They could not be overlooked. The contrast would be inharmonious to the basic scenery elements of line, form, color and texture. High contrast projects could not meet management class objectives without mitigation.

Moderate contrasts would attract attention and dominate the landscape. A project that would create a moderate contrast could only meet Class III and IV management objectives without mitigation.

Low contrasts might or might not dominate the scene, but because of the quality of the scenery or the size and scope of the project, it would meet all of the management class objectives.

This analysis assumes that the projects would be viewed from the foreground (up to one mile). The impacts to visual class would be rated at the time of the projects if no special mitigating measures are applied. Over time, nature might mitigate the impacts through revegetation. Also, standard operating procedures would allow many projects to be accomplished within allowable visual class guidelines.

Source: BLM, 1982

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GENERAL

Cultural resources constitute a BLM program in their own right, with the objective of managing them in a stewardship role for public benefit. To that end, the BLM Washington Office has issued instructions setting forth this management structure through a "use evaluation" system. The purposes of the system are for the analysis of scientific and socio-cultural values of cultural resources, to provide a basis for land use allocation of cultural resources and as an important part of cultural resource input to the planning system, and to identify information needed when existing documentation is inadequate to support a reasonable cultural resource-based land use allocation.

The evaluation of cultural resources requires the consideration of actual or potential use of individual sites or properties within five categories. These categories are:

1. Socio-cultural Use. This category refers to the use of an object (including flora and fauna), structure, or place based on a social or cultural group's perception that the object, etc., has utility in maintaining the group's heritage or its existence.

2. Current Scientific Use. This category refers to a study or project in progress at the time of evaluation for which scientists or historians are using a cultural resource as a source of information which will contribute to the understanding of human behavior.

3. Management Use. This category refers to use of a cultural resource by the BLM, or other entities interested in the management of cultural resources, to obtain specific information (other than basic inventory data) needed for the reasonable allocation of cultural resources or for the development of effective preservation measures. This category includes study plots allocated to examine specific impacts, deterioration, etc.

4. Conservation for Future Use. This category refers to the management of cultural resources by segregating them from other forms of appropriation until specific conditions are met in the future. Such conditions may include, but are not limited to, development of research techniques which are presently not available, or the exhaustion of all other resources similar to those represented in the protected sample. The category is intended to provide long-term, in-site preservation and protection of select cultural resources.

5. Potential Scientific Use. This category refers to the potential use of a cultural resource as a source of information which will contribute to the understanding of human behavior, utilizing research techniques currently available.

Sites that are rare and/or unique, that have research value, or are fragile or not prone to preservation due to impact from natural elements or man, may be considered by an Area Manager for cultural-based land use allocation. Sites types that are justifiable candidates for land use allocation per the aforementioned evaluation categories include, rockshelters and caves; vision quests; wooden structures; petroglyphs and pictographs; well preserved lithic scatters that contain temporal and functional information; topographic areas containing combinations of site types; and unusually large stone ring sites. Steamboat Butte Site; Petroglyph Canyon Site; Hangover Hollow Site; BLM Woodhut Site; Castle Butte Site; Spirit Spire Site; Marian's Shelter Site; Tillett Petroglyphs Site; Weatherman's Draw Site; Piney Creek Site; rockshelter sites in the Snowy Mountains; Bandit Site; Hoskins Basin National Historic District; Demijohn Flat National Historic District; and Skybird Castle Site are possible candidates for land use allocation within the resource area.

Land use allocation is also a facet of designation of an Area of Critical Environmental Concern. According to the Federal Land Policy and Management Act of 1976, an ACEC is an area "within the public lands where special management attention is required (when such areas are developed or use, or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards" (Sec. 103[a]).

The decision related to land use allocation and ACEC designation must be drawn from an approved activity plan. This is a written plan for a specific area of planning responsibility, a resource or a specific group of resources, which identifies cultural resource protection and use objectives, establishes the specific nature and sequences of actions to achieve objectives, and outlines procedures for evaluating accomplishments.

The authority for BLM's management of cultural resources is legally vested in:

The Act for the Preservation of American Antiquities, 1906 (34 Stat. 225);
The Historic Sites Act, August 21, 1935;
The National Historic Preservation Act, October 15, 1966 (80 Stat. 915), as amended (1980);
National Register of Historic Places Regulations, 36 CFR 60;
Advisory Council on Historic Preservation Regulations, 36 CFR 800;
The Preservation of American Antiquities, 43 CFR, Part 3;
National Environmental Protection Act, 1969;
Executive Order 11593, May 13, 1971;
Federal Land Policy and Management Act, 1976;
BLM Manual 8111, March 6, 1978;
American Indian Religious Freedom Act, 1978 (P.L. 95-341);
Archaeological Resources Protection Act, 1979, Proposed Rules, January 19, 1981;
Treatment of Archaeological Properties, A Handbook, Advisory Council on Historic Preservation, November 1980;
And numerous pertinent Interior Board of Land Appeals decisions, existing and proposed regulations, and Department of Interior Solicitor opinions.

Cultural resources in the Billings Resource Area are managed within a multiple use framework. This means that resource "trade-offs" are often required in order to allow a variety of uses of public lands and its resources. Prior to the trade-off decision, however, facets of the aforementioned legislation require that the BLM inventory the public land, and, in certain cases, private land, for cultural resources where a federal undertaking or development for other resources will take place. BLM must consider the affects of their undertakings on cultural properties.

As time and funds permit, BLM also sponsors inventories under the Cultural Resource Management Program to locate sites eligible for the National Register and to comply with Section 110 of the National Historic Preservation Act of 1966 as amended. These surveys are directed toward areas where prior data indicates a possible need for active resource management to protect important sites.

The BLM utilizes three classes of inventory: Class I--Existing Data Inventory--a review and compilation of known cultural resource data for a specific area; Class II--Sampling Field Inventory--a sample oriented field inventory; and Class III--Intensive Field Inventory--a complete surface inventory of a specific area. Prior to any Class II or III surveys the BLM conducts, encourages, or requires a Class I inventory to expedite field work, insure project thoroughness, and aid in possible predictive modeling. BLM inventories are conducted by Bureau archeologists or historians, or a cultural resource consulting firm is contracted to do the work. Experienced individuals outside the Agency, and cultural resource consulting firms must have a current Federal Antiquities Permit in order to conduct reconnaissance, excavation, or cultural research work on BLM surface lands.

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Through theoretical knowledge of the area, specific information goals and a research design, and the 8111 Manual, the BLM stipulates precisely how the survey will be conducted. The inventory should yield information on cultural resource types, location, and if possible, function; the likelihood for subsurface cultural material; environmental and topographic data; the types and numbers of features present; and the types and quantity estimates of bone, pottery, historical, and/or lithic material present. The BLM's 8111 Manual discourages collection of cultural material for analysis at the inventory stage. Instead, it specifies that only significant cultural material in immediate danger of destruction or disturbance may be collected.

Evaluation of the cultural resource is the next step required of the BLM. BLM cultural resource specialists may elect to determine the significance of the newly located cultural resources, or the contractor may be held accountable for significance statements. Evaluation is in terms of eligibility to the National Register of Historic Places (NRHP). The four criteria for eligibility are given in 36 CFR 60.6: The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and (A) that are associated with events that have made a significant contribution to the broad patterns of our history; or (B) that are associated with the lives of persons significant in our past; or (C) that embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or (D) that have yielded, or may be likely to yield, information important in prehistory or history. Cultural resources that do not meet any of the four criteria are determined "not eligible" to the NRHP by the BLM in consultation with the Montana State Historic Preservation Officer (MSHPO). Resources which do not qualify for the National Register need not be given any further concern in a trade-off situation.

Cultural resources that meet any of the criteria in 36 CFR 60.6 are determined eligible to the NRHP by the BLM in consultation with the MSHPO and Keeper of the National Register (Keeper) in Washington D.C. Eligible cultural resources that cannot be preserved in the BLM trade-off scheme, or avoided during an undertaking, may require mitigation. Prior to any mitigation, the BLM must consult with the MSHPO and Denver-based Advisory Council on Historic Preservation (ACHP) on the Bureau's determination of effect upon the resources, and how the BLM plans to mitigate that effect. The BLM maintains a cooperative no-action policy until a comment has been received from the ACHP.

Mitigation per se is accomplished by the BLM or a contracted consulting firm. It may entail the total recovery and analysis of surface information of a site with no depth; or it may require data recovery in the form of excavation and analysis. Excavation of a cultural resource as a result of a specific undertaking usually occurs only in the portions of the site where the resource will be affected.

BLM activities that require environmental assessment also necessitate a Class I inventory, and in specific instances, a Class II or III survey. Determinations of eligibility are usually sought at this stage. Determinations of effect may be delayed until the location of surface disturbance activities are known precisely. In the case of Environmental Impact Statements (EIS), the February 26, 1982 Draft Revised Regulations for the Protection of Historic Properties encourages that determinations of effect be included in each relevant EIS.

Subsequent to cultural resource inventory and evaluation, BLM cultural resource specialists and management may determine that a certain NRHP eligible site is best managed intact for the public on public domain. This type of decision usually guarantees any future trade-offs in favor of the cultural resource, and is based on the site's rarity; public information potential; integrity; complexity, aesthetic appeal; socio-cultural value; ability to contribute to scientific and/or historic knowledge; or any combination thereof. The BLM may also attempt to acquire scientifically or historically valuable sites on private land through land exchanges and specific negotiations with the landowner(s), when such a goal is determined to be in the public interest.

Legislation such as the Archaelogical Resources Protection Act. (ARPA) prohibits excavation, removal, damage, alteration or defacement of any significant archeological resource located on public or Indian lands unless such activity is pursuant to an issued Permit. Further, no person may sell, purchase, exchange, transport, receive or offer to sell, purchase, or exchange any archeological resource if such resource was excavated or removed from public or Indian lands. Individuals who participate in the above violations may be fined not more than $10,000 or imprisoned not more than one year, or both upon conviction. Subsequent crimes, or a cultural artifact sale value--archeological repair value exceeding $5,000, warrants larger and longer penalties under the law.

Public education programs in the Billings Resource Area consist of public meetings and school presentations given by MSO cultural resource personnel. Several BLM films are available to the public and Agency staff. They stress the importance of protecting the nation's heritage and point out the current wanton destruction of sites on public land by relic hunters--especially in the American southwest. The films reiterate that such activity is against the law.

The Billings Resource Area cooperates with law enforcement officers in the MSO by being willing to help prosecute those who would endanger cultural resources on BLM land. In addition, the staff at the resource area maintains a watchdog attitude toward people and activities on lands under its jurisdiction.

Source: BLM, 1982

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E/D Model

The economic/demographic data used in the Draft Billings RMP/EIS for assessing impacts from coal development was provided by the Montana State Office Economic/Demographic (E/D) computer model. This model was developed by North Dakota State University (NDSU) and was expanded into Montana under a contract between the Montana State Office of BLM and the Department of Agricultural Economics, NDSU.

Outputs from the model can be at the regional, county, and municipal levels and include such variables as type of employment, population, population by age and gender, school enrollments by age, housing requirements by type, public sector costs and revenues by type, and net fiscal balance. Estimates of business activity, personal income, and requirements for medical and criminal justice services are available at the regional level. The model provides annual projections of these indicators over a 25-year planning horizon (1981-2005).

The E/D model uses a large range of user specified inputs which are designed to customize the model to a particular geographic area. This feature allows the user to take account of any anomalies which may be present in the area studied.

The E/D model is comprised of the five submodules. The following description discusses the overall objective of each module and explains how each module interacts with other modules. A much more detailed description of the overall E/D model and the five internal modules is available upon request.

Input-Output Module:

This portion of the model is responsible for forecasting the changes in the study area's economic sectors as a result of one or more development scenarios. This is accomplished by forecasting sales to final demand in the area's basic economic sectors. Technical input/output coefficients are then applied to the final demand forecasts to obtain projected total gross business volume by sector for the projection period. The projected total gross business volume, by sector, is then divided by the sector-specific productivity ratios to obtain the estimated employment levels required to bring about the level of development specified in the development scenario(s). This can loosely be considered the demand for labor necessary for development to occur.

Cohort Survival Module:

This module essentially forecasts the population by age and sex expected to be residing in the study area. This forecasting procedure considers birth rates, survival rates and migration rates to arrive at forecasts of study area population levels by age and sex. Labor force participation rates by sex, were then applied to the forecasted population levels to determine the forecasted labor force in the study area. This was considered the study area's future available labor supply. At this point, the E/D interface (re: Figure 1) comes into play by comparing the demand for labor (resulting from some development scenario) with the available supply of labor in the study area. Assumptions are made at this point concerning unallocated labor pool constraints which affect the amount of project related in-migration.

Residential Allocation Module:

This module allocates any immigration which is forecasted via the comparison of labor supply and labor demand in the E/D interface. Obviously, in-migration would occur if the project-related demands for labor are greater than the local available labor supply.

Data from past studies are used in developing estimates concerning the employment type specific population characteristics of the forecasted incoming workforce. These characteristics include: gender, marital status, presence or absence of family in the impact area, etc. This process results in estimates by year, of the overall characteristics of the total population influx forecasted by the model for the study area. This population increase is then allocated to individual study area communities via gravity modeling. This process assumes that a) immigrants will tend to settle in existing population centers in direct proportion to the population of those communities and b) immigrants will reside in communities in an inverse relationship to the distance between that community and the job site. In addition, the gravity model recognizes that non-distance qualitative considerations also influence settlement choices. This model is of the following form:

$$Mi = \frac{\frac{Pi}{Di} \quad Wi}{\sum_{i=1}^{n} \frac{Pi}{n_i^a} \quad Wi}$$

Where Mi = fraction of total immigrants locating in city i
Pi = population of city i
D_i^a = distance between city i and job site raised to the power a
Wi = relative qualitative attraction of city i

Service Requirements Module

This portion of the model forecasts selected public service requirements of the estimated population influx. These services are education, housing, medical, criminal justice. This is provided as model output to forecast the demands on these four services under development conditions.

Fiscal Impact Module:

This module forecasts the changes in costs and revenues of governmental units which are likely to occur as a result of one or more development scenarios. The changes in costs and revenues would occur as a result of changes in local population levels and associated service demands. This analysis results in forecasts of net public sector revenues and costs at the local level by comparing cost and revenue forecasts to arrive at a net surplus or deficit value annually. A net public service deficit indicates that costs exceed revenues for that period. This can provide indications of when project-related public sector deficits or surpluses could occur in the future and to what extent. As such, it can alert interested parties to the possible occurrence of these types of impacts and give a general idea of when these impacts could occur.

The above information is intended to give the reader an "overview" understanding of how the E/D model works. As mentioned earlier, a much more detailed writeup of the technical aspects of the model is available upon request.

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Coal Mine Specifications

The following are input specifications used in the E/D model in analyzing impacts from coal development. For analysis purposes only, a scenario was developed which proposes that two mines will be developed in the resource area--a 300,000 ton per year surface mine in the Bull Mountains of Musselshell County and a 150,000 ton per year underground mine in the Fromberg area of Carbon County.

Coal Mine Specifications

	Carbon County	Musselshell County
Type of Mine:	Underground	Surface
Location:	2 Miles W., Fromberg, MT	15 Miles SE, Roundup, MT
Begin Construction:	1985	Mid-1987
Begin Production:	1988	End-1988
Beginning Yr. Tonnage:	30,000 tpy	50,000 tpy
Full Production Tonnage:	150,000 tpy	300,000 tpy
Heat Value:	11,000 BTUs/lb	10,700 BTUs/lb
Percent Federal Coal:	75%	50%
Acreage Mined/Yr.:	Not Applicable	18
Severance Tax Rate:	5%	30%

Social Methods

The Guide to Social Assessment

The social analysis was based on the Guide to Social Assessment which was developed by Mountain West Research, Inc. under contract with the Bureau of Land Management. The guide was designed to assess the impact of energy related development in rural western United States communities. The guide was based on an intensive literature search and primary research in the western communities where energy related development had taken place.

Impacts to communities are addressed by examining the direct project inputs such as incoming population and number of jobs created in light of the community's resources, social organization and level of well-being. Community resources include historical experience with growth as well as cultural demographic and employment characteristics and attitudes toward development. Community social organization includes the social structure and processes which have evolved over time and are particular to each community. These structures include diversity/complexity, outside linkages, distribution of resources and power, coordination and cooperation and personal interaction. Community well-being includes rates of behaviors (such as crime, divorce, suicide, unemployment), access to resources (employment, community services, recreation) and perceptions of community and personal well-being.

Impacts are assessed by determining whether and in what manner the community's social structure and well-being might be changed given the direct project inputs and the existing situation. As a high estimate, the guide suggests a 10% population change might indicate a significant impact. The actual impacts would depend on many things including the community's past history of development, monies available to mitigate impacts and the community's ability to mobilize to prepare for the development.

Source: BLM, 1982

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APPENDIX 4.9: METHODOLOGY FOR CONTROLLED BURNS

A. General

The initial assessment and identification allotments which BLM felt would have potential for sagebrush manipulation through burning was conducted systematically, utilizing in-house inventory data which provides canopy coverage estimates by vegetative type. Sagebrush stands having estimated canopy coverage exceeding 25% were mapped. BLM then applied vegetative response capabilities of the various soil groupings to the mapped areas. (Soil groupings and their rate of response can be found in Appendix 4.1.) BLM's final acreage figure of 21,520 acres reflects the maximum number of acres, if burned, that could respond favorably.

B. Objectives

No large scale burns will be proposed. The primary objective is to open small acreages of very dense canopy sagebrush to enhance the production of grasses and forbs. All burns will be conducted so as to result in irregular shapes, where possible, to maximize the "edge" effect produced. The burns will be located to benefit both wildlife and livestock.

C. Inventory

On-the-ground inventories of the 21,520 acres are underway on 31 grazing allotments throughout the resource area. The inventory, when completed, will identify on aerial photo overlays all sagebrush stands having a canopy coverage exceeding 40%. (Forty percent was selected because of its minimum value to most wildlife species and livestock.) All known crucial habitats for upland game birds, antelope and state species or special interest and concern are then plotted. Where crucial wildlife habitats overlap sagebrush stands, the area will automatically be eliminated from further consideration. Those areas which are not in conflict will be carried forward for consideration for burning.

D. Coordination

The Montana Department of Fish, Wildlife and Parks (MDFW&P) will be requested to offer an opinion on the suitability of any proposed burning project. The MDFW&P will also be consulted on the development of the design and stipulations to be included in the burn plans. All burns will be conducted in conformance with the Montana Cooperative Smoke Management Plan.

E. Burning

Once a comprehensive burn plan has been completed, the burn will be carried out cooperatively between the BLM, State of Montana and the livestock operator. Every effort possible will be made to ensure adequate fire fighting equipment to handle the burn is standing by, and that all safety standards are closely adhered to.

F. Monitoring

For each burn site, BLM will initiate an intensive monitoring plan to document the rate of response and evaluate the success in meeting overall desired objectives.

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Glossary

ACCELERATED EROSION—Erosion processes increased by the activities of man. See "EROSION".

ACTIVITY PLANNING—Site-specific planning which precedes actual development. This is the most detailed level of BLM planning.

ACTUAL USE—The true amount of grazing AUMs based on the numbers of livestock and grazing dates submitted by the livestock operator and confirmed by periodic field checks by the BLM.

ADJUSTMENTS—Changes in animal numbers, seasons of use, kinds or class of animals or management practices as warranted by specific conditions.

ALLOTMENT—An area of land where one or more livestock operators graze their livestock. Allotments generally consist of BLM lands but may also include state owned and private lands. An allotment may include one or more separate pastures. Livestock numbers and seasons of use are specified for each allotment.

ALLOTMENT MANAGEMENT PLAN (AMP)—A written program of livestock grazing management, including supportive measures if required, designed to attain specific management goals in a grazing allotment.

ALLUVIAL VALLEY FLOORS—The definition of this phrase as used for surface mining control and reclamation as stated in Public Law 95-87, August 3, 1977 (Sec. 701(1)) is:

"Alluvial valley floors" means the unconsolidated stream land deposits holding streams where water availability is sufficient for subirrigation or flood irrigation agricultural activities but does not include upland areas which are generally overlain by a thin veneer of colluvial deposits composed chiefly of debris from sheet erosion, deposits by unconcentrated runoff or slope wash, together with talus, other mass movement accumulation and windblown deposits.

In order to apply this definition to the Billings Resource Area, the following supplemental statements are made:

A. Alluvial valley floors, includes alluvium on active floodplains (including channel areas), terraces and fans with slopes up to 15%.

B. The land designated as "alluvial valley floors" is partially subirrigated (water table within 12 feet of surface), flood irrigated or flood irrigable with water developments.

C. Sufficient water is available for subirrigation, flood irrigation, gravity irrigation from irrigation ditches, or sprinkler irrigation from wells, dams or other water sources on alluvial valley floors.

D. Sources of water for these alluvial valley floors are irrigation ditches from diversion of streams, from dams or from water tables.

E. Irrigation dams may be large enough for seasonlong irrigation or so small they are used only in spring or early summer.

F. Minimum width of alluvial valley floor areas is 50 feet with subirrigated areas sometimes near this width.

G. Subirrigation of the land is derived from the groundwater systems of the valley floor. This water table may be derived from, or supplemented by, seepage from dams in the upper watershed area.

H. The irrigation capability of an area is based on streamflow, water yield, soils, water quality and topography.

I. Agricultural activities means, with respect to alluvial valley floors, the use of any tract of land for the production of animal or vegetable life, where the use is enhanced or facilitated by subirrigation or floor irrigation associated with alluvial valley floors. These uses include, but are not limited to, the pasturing, grazing or watering of livestock. Crop production is aided by the availability of water from subirrigation or flood irrigation. Those uses do not include agricultural practices which do not benefit from the availability of water from subirrigation or flood irrigation.

ALLUVIUM—Soil and rock debris deposited by streams.

ANIMAL UNIT MONTH (AUM)—A standardized measurement of the amount of forage necessary for the complete sustenance of one animal for 1 month; also, the measurement of the privilege of grazing one animal for 1 month.

AQUATIC—Living or growing in or on the water.

AQUIFER—A rock formation, group of rock formations or part of a rock formation that contains enough water-saturated permeable material to yield water to a spring or well.

AVOIDANCE AREAS—Land areas that pose particular environmental impacts which would be difficult or impossible to mitigate or which impose unusual engineering constraints.

BAILY-KUCHLER SYSTEM—A classification system that divides the United States into ecosystems based on climate, vegetation, soils and landform.

BROWSE—To browse is to graze a plant; also, browse (noun) is the tender shoots, twigs and leaves of trees and shrubs often used as food by cattle, deer, elk and other animals.

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CANOPY COVER—The percentage of ground covered when a polygon drawn around the extremities of the undisturbed canopy of each plant is projected on the ground and all such projections on a given area are added together.

CAREY ACT—An act to aid public land states in the reclamation of the desert lands and the settlement, cultivation and sale in small tracts to actual settlers. (Act of August 18, 1894 as amended.)

CATCHMENT—A structure built to collect and retain water.

CHANNEL—An open conduit either naturally or artificially created which periodically or continuously contains moving water or forms a connecting link between two bodies of water.

CHANNEL STABILITY—A relative term describing erosion or movement of the channel walls or bottom due to waterflow.

CHARACTERISTIC LANDSCAPE—The established landscape in an area, not necessarily a natural area. It could refer to a farming community, urban area or any other landscape which has an identifiable character.

CHERRY-STEMMED ROAD—A road that enters but doesn't pass completely through a wilderness study area.

CHISELING—Shallow tillage of the range to speed range improvement by increasing infiltration and reducing competition to desirable species from a dense stand of less desirable vegetation.

CLASSIFICATION AND MULTIPLE USE ACT (C&MU ACT)—An act to authorize and direct that certain lands exclusively administered by the Secretary of the Interior be classified in order to provide for their disposal or interim management under principles of multiple use and to produce a sustained yield of products and services, and for other purposes.

CLAYEY—A soil containing more than 35% clay. The textural classes are sandy clay, silty clay, clay and clay loam and silty clay loam.

CLAYPAN—A dense, compact layer in the subsoil having a much higher clay content than the overlying material from which it is separated by a sharply defined boundary.

CLIMAX—The highest ecological development of a plant community capable of perpetuation under the prevailing climatic and soil conditions.

COMPACTION—The process of packing firmly and closely together; the state of being so packed, e.g., mechanical compaction of soil by livestock or vehicular activity. Soil compaction results from particles being pressed together so that the volume of the soil is reduced. It is influenced by the physical properties of the soil, moisture content and the type and amount of compactive effort.

CORRIDOR—A strip of land usually a few to many times the width of a right-of-way through which one or more existing or potential facilities may be located.

COW-CALF OPERATION—A livestock operation in which a basic breeding herd of cows, heifers and bulls is maintained. The cows produce a calf crop each year and the operation keeps some heifer calves from each crop for breeding herd replacements. The operation sells the rest of the calf crop between the ages of 6-12 months along with old or nonproductive cows and bulls.

CRITICAL WILDLIFE HABITAT—The area of land, water and airspace required for the normal needs and survival of an endangered species.

CRUCIAL WILDLIFE HABITAT—Parts of the habitat necessary to sustain a wildlife population at critical periods of its life cycle. This is often a limiting factor on the population, such as breeding habitat, winter habitat, etc.

CUESTA—A sloping plain terminated on one side by a steep slope.

CULTURAL RESOURCES—A term that includes items of historical, archeological or architectural significance which are fragile, limited and non-renewable portions of the human environment.

CULTURAL SITE—Any location that includes prehistoric and/or historic evidence of human use.

DEFACTO CORRIDOR—An area in which one or more linear facilities already exist.

DEFERMENT—The withholding of livestock grazing until a certain stage of plant growth is reached.

DEFERRED GRAZING—Discontinuance of livestock grazing on an area for a specified period of time during the growing season to promote plant reproduction, establishment of new plants or restoration of the vigor by old plants.

DEFERRED ROTATION GRAZING—Discontinuance of livestock grazing on various parts of a range in succeeding years, allowing each part to rest successively during the growing season. This permits seed production, establishment of new seedlings or restoration of plant vigor. Two, but more commonly three or more, separate pastures are required. Control is usually ensured by fencing but may be accomplished by herding on sheep ranges.

DESERT LAND ENTRIES—Authorized the reclamation by irrigation, of the arid and semiarid public lands of the western states through individual effort and private capital, it being assumed that settlement and occupation would follow when the lands were rendered more productive and habitable. (Act of March 3, 1977 as amended by the Act of March 3, 1981.)

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DESIGNATED CORRIDOR—A linear area of land with legally defined and recognized boundaries and capacities having ecological, technical, economic, social or similar advantages over other areas for the present or future location of transportation or utility rights-of-way, and which have been identified and designated by legal public notice.

DIET OVERLAP—The presence of the same forage plant in the diet of several herbivores.

DISTRIBUTION—The uniformity of livestock grazing over a range area. Distribution is affected by the availability of water, topography and type and palatability of vegetation as well as other factors.

DRAINAGE (INTERNAL SOIL)—The property of a soil that permits the downward flow of excess water. Drainage is reflected in the number of times and in the length of time water stays in the soil.

ECOLOGICAL RANGE CONDITION CLASSES—Four classes used to express the degree to which the composition of the present plant community reflects that of climax. They are:

Range Condition Class	Percentage of Present Plant Community That is Climax for the Range Site
Excellent	76-100
Good	51-75
Fair	26-50
Poor	0-25
High Good Condition	65% - 75% of climax. A condition score of 65-75.
Low Good Condition	51% - 64% of climax. A condition score of 51-64.

ELIMINATION GRAZING—Relinquishment or cancellation of livestock grazing on public lands currently being grazed by livestock.

ENDANGERED OR THREATENED SPECIES—Determined for plants and animals by one or a combination of the following factors:

1. The present threatened destruction, modification or curtailment of a species habitat or range.
2. Over-utilization of a species for commercial sporting, scientific or educational purposes.
3. Disease or predation of the species.
4. The inadequacy of existing regulatory mechanisms.
5. Other natural or human caused factors affecting a species' continued existence.

ENVIRONMENTAL IMPACT STATEMENT (EIS)—A written analysis of the impacts on the environment of a proposed project (e.g., a grazing program).

EPHEMERAL STREAM—A stream that flows only after rains or during snowmelt.

EROSION—The wearing away of the land surface by running water, wind, ice or other geological agents.

EROSION SUSCEPTIBILITY—The susceptibility of a soil to erosion when no cover is present. The rate of soil displacement depends on the physical properties of the soil, rainfall intensity and slope gradient.

EXCLUSION AREAS—Land areas determined to be unavailable for corridor allocation or facility siting for reasons of unsuitability, legislative classification or prior, unalterable allocation to uses incompatible with facility siting.

EXPOSURE—Direction of a slope in respect to points of the compass.

FEDERAL LAND POLICY AND MANAGEMENT ACT OF 1976 (FLPMA)—Public Law 94-579. October 21, 1976, often referred to as the BLM's "Organic Act", which provides the majority of the BLM's legislated authority, direction, policy and basic management guidance.

FLOODPLAIN—The relatively flat area or lowlands adjoining a body of standing or flowing water which has been or might be covered by floodwater.

FORB—A broad-leafed herb that is not grass, sedge or rush.

FOREST LAND—Land which is now, or is capable of being at least 10% stocked by forest trees, and is not currently developed for nontimber use.

FORMATION—A sequence of rock strata which are recognizable over a large area.

GEOMORPHIC—Pertaining to the form of the earth or its surface features.

GRANDFATHERED ACTIVITY—For wilderness purposes, any land surface disturbance or alteration that had occurred within a wilderness study area prior to the passage of FLPMA (October 21, 1976).

GRAZING DISTRICT—Established by the Taylor Grazing Act, grazing districts are administrative subdivisions of the rangelands under jurisdiction of the BLM.

GRAZING SYSTEM—The manipulation of livestock grazing to accomplish a desired result.

GROUND COVER—Vegetation, mulch, litter, rock, etc.

GROUNDWATER—Water contained in pore spaces of consolidated and unconsolidated surface material.

HABITAT—A specific set of physical conditions that surround a species group of species or a large community. In wildlife management, the major constituents of habitat are considered to be food, water, cover and living space.

HUNTER DAY—One person hunting during any part of one day.

HYDROLOGY—The science dealing with the behavior of water as it occurs in the atmosphere, on the surface of the ground and underground.

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IGNEOUS ROCKS—Rocks formed by solidification of molten earth materials. Intrusive igneous rocks are those solidified beneath the surface of the earth; extrusive igneous rocks emerged at the surface as molten material before solidifying (e.g., lava).

INFILTRATION—The penetration of water into the soil surface through pores of the soil. The rate and amount of infiltration is limited by the size and abundance of pores, organic matter content and the water absorption capacity of the soil.

INHOLDINGS—State or privately-owned lands inside a wilderness study area.

INTERIM MANAGEMENT POLICY AND GUIDELINES FOR LANDS UNDER WILDERNESS REVIEW (IMP)—A BLM document, dated December 12, 1979, which defines the policy for management of Wilderness Study Areas until a final determination on wilderness designation is made by Congress.

INTERMITTENT STREAM—A stream which flows most of the time but occasionally is dry or reduced to pool stage.

INTERSEEDING—The practice of seeding native or introduced plant species into native range in combination with various mechanical treatments. Interseeding differs from range seeding in that only part of the native vegetation is removed to provide a seedbed for the seeded species.

KEY AREA (GRAZING)—An area that receives at least moderate use, has the productive capability to respond to management and is important from a livestock standpoint.

KEY SPECIES—Major forage species on which range management should be based.

KNOWN GEOLOGIC STRUCTURE (KGS)—Areas known to contain producible oil and gas deposits.

LAND TREATMENT—All methods of artificial range improvement and soil stabilization such as reseeding, brush control (chemical and mechanical), pitting, furrowing, water spreading, etc.

LAND UTILIZATION (LU) LANDS—Land reacquired and managed by BLM through the Bankhead Jones Act of 1937.

LEASABLE MINERALS—Minerals subject to lease by the Federal Government including oil, gas and coal.

LIVESTOCK OPERATION—The management of a ranch or farm so that a significant portion of the income is derived from the continuing production of livestock.

LOCATABLE MINERALS—Generally the metallic minerals subject to development specified in the Federal Mining Law of 1872; with the resource area, includes bentonite gypsum, uranium minerals.

MANAGEMENT FRAMEWORK PLAN (MFP)—A planning decision document that establishes for a given area, land use allocations, coordination guidelines for multiple use or protection. It is the BLM's land use plan. An MFP is prepared in three steps: (1) resource recommendations, (2) impact analysis and alternative development and (3) decision making.

MECHANICAL TREATMENTS—Treatment by mechanical means of an area of range including contour furrowing, pitting, plowing and seeding, chiseling, scalping, water spreaders, etc. to accomplish desired objectives.

MINERAL ENTRY—The location of mining claims by an individual to protect his right to a valuable mineral.

MITIGATION MEASURES—Methods or procedures committed to by BLM for the purpose of reducing or lessening the impacts of an action.

MULTIPLE USE—Balanced management of the various surface and subsurface resources, with permanent impairment of the productivity of the land, that will best meet present and future needs.

NATURAL GEOLOGIC EROSION—The wearing away of the land's surface by running water, wind, ice or other geological agents, unaffected by human activities.

NONUSE—Available grazing capacity in AUMs which is not permitted during a given time period.

OFF-ROAD VEHICLE (ORV)—Any motorized track or wheeled vehicle designed for cross-country travel over any type of natural terrain.

OFF-ROAD VEHICLE DESIGNATIONS—

OPEN—Designated areas and trails where off-road vehicles may be operated (subject to operating regulations and vehicle standards set forth in BLM Manuals 8341 and 8343).

LIMITED—Designated areas and trails where the use of off-road vehicles is subject to restrictions such as limiting the number or types or vehicles allowed, dates and times of use (seasonal restrictions), limiting use to existing roads and trails, or limiting use to designated roads and trails. Under the designated roads and trails designation, use would be allowed only on roads and trails that are signed for use.

Combinations of restrictions are possible such as limiting use to certain types of vehicles during certain times of the year.

CLOSED—Designated areas and trails where the use of off-road vehicles is permanently or temporarily prohibited. Emergency use of vehicles is allowed.

OUTSTANDING—Standing out among others of its kind; conspicuous, prominent or, superior to others of its kind, distinguished, excellent as used in the description of wilderness characteristics.

PEAK DISCHARGE—The highest stage or channel flow attained by a flood, usually expressed as the volume of water in cubic feet passing a given point in a one second time period, hence, cubic feet/second.

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PERCENTAGE OF USE—Grazing use of current vegetation growth, usually expressed as a percentage of weight removed.

PERENNIAL (PERMANENT) STREAM—A stream which flows 9 or more months out of a year.

PERMIT (GRAZING)—An authorization that permits the grazing of a specified number and kind of livestock on a designated area of BLM lands for a period of time, usually not more than 1 year.

PERMIT VALUE—The market value of a BLM grazing permit which is often included in the overall market value of the ranch.

PLANNING CORRIDOR—A generally broad rather than narrow area used to evaluate where a specific right-of-way should be placed.

PLANT SUCCESSION—The process of vegetative development whereby an area becomes successively occupied by different plant communities of higher ecological orders.

POST-FLPMA LEASES—Mineral leases issued after passage of the Federal Land Policy and Management Act of October 21, 1976.

PRE-FLPMA LEASES—Mineral leases issued pryor to passage of the Federal Land Policy and Management Act of October 21, 1976.

PRIMITIVE RECREATION—Nonmotorized outdoor recreation that requires undeveloped areas in which to take place as used in describing wilderness opportunities.

PRODUCTIVE FOREST LAND—Forest land that is capable of yielding at least 20 cubic feet of wood per acre per year of any tree species.

PROPER USE—The degree and time of use of the current year's plant growth which, if continued, will either maintain or improve the range condition consistent with conservation of other natural resources.

PROPER USE FACTOR—The degree of use a kind of grazing animal will make of a particular plant when the range is properly grazed.

PUBLIC LANDS—Any land and interest in land (outside of Alaska) owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management.

PUBLIC PARTICIPATION—Part of BLM's planning system that provides the opportunity for citizens as individuals or groups to express local, regional and national perspectives and concerns in the rule making, decision making, inventory and planning processes for public lands. This includes public meetings, hearings or advisory boards or panels that may review resource management proposals and offer suggestions or criticisms for the various alternatives considered.

RANGE CONDITION—The present state of vegetation of a range site in relation to the climax plant community of that site. It is an expression of the relative degree to which the kinds, proportions and amounts of plants in a plant community resemble that of the climax plant community for that site. Range condition is basically an ecological rating of the plant community. Air-dry weight is the unit of measure used in comparing the composition and production of the present plant community with that of the climax community.

RANGE DEVELOPMENT—A structure, excavation, treatment or development to rehabilitate, protect or improve public lands to advance range betterment. "Range Development" is synonymous with "Range Improvement."

RANGE FACILITIES—Any structure or excavation such as water sources, shade sources, oilers, etc., designed to facilitate range management.

RANGE IMPROVEMENT—The same as "Range Development."

RANGE SEEDING—The process of establishing vegetation by mechanical dissemination of seed.

RANGE SITE—A distinctive kind of rangeland in its ability to produce a characteristic natural plant community. A range site is the product of all the environmental factors responsible for its development. It is capable of supporting a native plant community typified by an association of species that differs from that of other range sites in the kind or proportion of species or in total production.

RANGE TREND—The direction of change in range condition and soil.

RAPTOR—Bird of prey with sharp talons and strongly curved beaks, e.g., hawks, owls, vultures, eagles.

RECREATION AND PUBLIC PURPOSES ACT (R&PP ACT)—This act authorizes the Secretary of the Interior to lease or convey public lands for recreational and public purposes under specified conditions of states or their political subdivisions, and to nonprofit corporations and associations.

RECREATIONAL OPPORTUNITY—Those outdoor recreation activities which offer satisfaction in a particular physical, social and management setting in the EIS areas, these activities are primarily hunting, fishing, wildlife viewing, photography, boating and camping.

REPRESENTATIVE RANCH BUDGET—A schedule of average costs, receipts and income for a typical ranch of a given size.

RESIDUAL GROUND COVER—That portion of the total vegetative ground cover that remains after the livestock grazing season.

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REST ROTATION GRAZING—An intensive system of management where grazing is deferred on various parts of the range during succeeding years, allowing the deferred part complete rest for 1 year. Two or more units are required. Control by fencing is usually necessary on cattle range but may be obtained by herding on sheep ranges.

RIPARIAN AREA—A specialized form of wetland with characteristic vegetation restricted to areas along, adjacent to or contiguous with rivers and streams, also, periodically, flooded lake and reservoir shore areas, as well as lakes with stable water levels.

RUNOFF—The water that flows on the land surface from an area in response to rainfall or snowmelt. As used in this RMP runoff from an area becomes streamflow when it reaches a channel.

SALEABLE MINERALS—High volume, low value mineral resources including common varieties of rock, clay, decorative stone, sand and gravel.

SALINITY—A measure of the mineral substances dissolved in water.

SANDY—A soil containing a large amount of sand. Textural classes are sands and loamy sands.

SCENIC QUALITY—The degree of harmony, contrast and variety within a landscape.

SEASON OF USE—The time of livestock grazing on a range area based on type of vegetation or stage of vegetative growth.

SEASONAL (SEASON LONG) GRAZING—Grazing use throughout a specific season.

SEDIMENT—Soil, rock particles and organic or other debris carried from one place to another by wind, water or gravity.

SEDIMENTATION—The action or process of deposition of material borne by water, wind or glacier.

SHRUB—A low woody plant, usually with several stems, that may provide food and/or cover for animals.

SIMULTANEOUS LEASING (OG SIM)—Oil and gas estates on public lands leased through lottery-type drawings.

SOIL SERIES—The basic unit of soil classification, being a subdivision of a family and consisting of soils which are essentially alike in all major profile characteristics except in the texture of the "A" horizon (or surface layer).

SOIL VEGETATION INVENTORY METHOD (SVIM)—A composite of various inventory methods, including soil and vegetation, and provides a sampling frame for wildlife species occurrence inventories and gathers data used by all the resources.

SOLITUDE—The state of being alone or remote from habitations; isolation or a lonely, unfrequented or secluded place as used in describing wilderness opportunities.

SPECIES OF SPECIAL INTEREST OF CONCERN—Species not yet listed as "endangered or threatened" but whose status is being reviewed because of their widely dispersed populations or their restricted ranges. A species whose population is particularly sensitive to external disturbance.

STANDARD METROPOLITAN STATISTICAL AREA (SMSA)—A county containing at least one city with 50,000 inhabitants plus any adjacent urban territory.

STREAMBANK (and CHANNEL) EROSION—This is the removal, transport, deposition, recutting and bedload movement of material by concentrated flows.

SURFACE MINING CONTROL AND RECLAMATION ACT OF 1977 (SMCRA)—Public Law 95-87, August 3, 1977—This law provides for: (1) surface coal mining using methods which will protect the environment and the rights of surface owners over Federally reserved coal; (2) reclamation of mined land as contemporaneously as possible with mining operations; (3) reclamation of previously abandoned mine areas.

TACK-ON—Public lands with wilderness characteristics but less than 5,000 acres in size adjacent to other public lands designated as wilderness or being studied for designation.

THREATENED SPECIES—A species that the Secretary of Interior has determined to be likely to become endangered within the foreseeable future throughout all or most of its range. See also "Endangered or Threatened Species."

TOPOGRAPHY—The exact physical features and configuration of a place or region; the detailed and accurate description of the landforms of a place or region.

TOTAL DISSOLVED SOLIDS—The dry weight of dissolved material, organic and inorganic, contained in water.

TRESPASS—The grazing of livestock on public lands without proper authority, resulting either from a willful or negligent act.

TURBIDITY—An interference to the passage of light through water due to insoluable particles of soil, organics, micro-organisms and other materials.

UNIT RESOURCE ANALYSIS (URA)—A comprehensive display of physical resource data and an analysis of the current use, production, condition and trend of the resources and the potentials and opportunities within a planning unit, including a profile of ecological values.

VEGETATION (GROUND) COVER—The percent of land surface covered by all living vegetation (and remnant vegetation yet to decompose) within 20 feet of the ground.

VEGETATION MANIPULATION—Alteration of present vegetation by using fire, plowing, spraying or other means to manipulate natural successional trends.

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VISUAL RESOURCE(S)—The land, water, vegetation and animals that comprise the scenery of an area.

VISUAL RESOURCE MANAGEMENT CLASSES—The degree of acceptable visual change within a characteristic landscape. A class is based upon the physical and sociological characteristics of any given homogeneous area and serves as a management objective.

CLASS I areas (preservation) provide for natural ecological changes only. This class includes primitive areas, some natural areas, some wild and scenic rivers and other similar sites where landscape modification activities should be restricted.

CLASS II (retention of the landscape character) includes areas where changes in any of the basic elements (form, line, color or texture) cause by management activity should not be evident in the characteristic landscape.

CLASS III (partical retention of the landscape character) includes areas where changes in the basic elements (form, line, color or texture) caused by management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.

CLASS IV (modification of the landscape character) includes areas where changes may subordinate the original composition and character; however, they should reflect what could be a natural occurrence within the characteristic landscape.

CLASS V (rehabilitation or enhancement of the landscape character) includes areas where change is needed. This class applies to areas where the landscape character has been so disturbed that rehabilitation is needed. This class would apply to areas where the quality class has been reduced because of unacceptable intrusions. It should be considered an interim short-term classification until one of the other classes can be reached through rehabilitation or enhancement.

WATER QUALITY—The chemical, physical and biological characteristics of water with respect to its suitability for a particular use.

WATERSHED—All lands which are enclosed by a continuous hydrologic drainage divide and lie upslope from a specified point on a stream.

WATERSHED COVER—The material (vegetation, litter, rock) covering the soil and providing protection from, or resistance to, the impact of raindrops and the energy of overland flow, and expressed in percent of the area covered.

WELL-BEING—Condition of human happiness and health, measured objectively by socioeconomic indicators or subjectively with individual perceptions.

WETLANDS—Permanently wet or intermittently flooded areas where the water table (fresh, saline or brackish) is at, near or above the soil surface for extended intervals, where hydric wet soil conditions are normally exhibited and where water depths generally do not exceed two meters.

WILDERNESS—An area formally designated by Congress as a part of the National Wilderness Preservation System.

WILDERNESS CHARACTERISTICS—The definition contained in Section 2(c) of the Wilderness Act (78 Stat. 891).

WILDERNESS STUDY AREA (WSA)—An area determined to have wilderness characteristics. Study areas will be subject to interdisciplinary analysis and public comment to determine wilderness suitability. Suitable areas will be recommended to the President and Congress for wilderness designation.

WINDOW—Usually short, narrow passageways through constrained areas which are the most feasible potential locations for linear facilities such as powerlines, pipelines, etc. considering engineering and/or environmental factors.

WOLF PLANT—A plant that, though the species is considered palatable, is not grazed by livestock. The term "wolfy" is often used to describe this condition which is common on underutilized crested wheatgrass seedings.

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References

Advisory Council on Historic Preservation. 1980. Treatment of Archeological Properties, A Handbook.

Ampian, S.G. 1982. *Clays: Mineral Commodity Summaries*. Bureau of Mines, United States Department of the Interior.

Austin, Richard C. and Barrelli, Peter. July 1971. *The Strip Mining of America, an Analysis of Surface Coal Mining and the Environment*. Sierra Club, New York, p. 21.

Autenrieth, R.E. 1978. "A Study of Birth Sites Selected by Pronghorn Does and the Bed Sites of Fawns." Proceedings of the Seventh Biennial Pronghorn Antelope Workshop, 7:127-134.

Behnke, R.J. and Zara, M. 1976. Biology and Management of Threatened and Endangered Western Trouts. Technical Report 28. U.S. Forest Service (USDA). Fort Collins, Colorado: Rocky Mountain Forest and Range Experiment Station.

Berg, P.F. 1956. A Study of Waterfowl Broods in Eastern Montana with Special Reference to Movements and the Relationship of Reservoir Fencing to Production. *Journal of Wildlife Management*, 20(3):253-262.

Blackstone, D.L. 1975. *Geology of the East Pryor Mountain Quad*. Montana Bureau of Mines and Geology, Publication 1969.

Branson, F.A.; Miller, R.F.; and Queen, I.S. 1962. Effects of Contour Furrowing, Grazing Intensities, and Soils on Infiltration Rates, Soil Moisture, and Vegetation Near Fort Peck, Montana. *Journal of Range Management*, 15:151-58.

Brown, C.J.D. 1971. Fishes of Montana. Bozeman, Montana. Big Sky Books.

Cannon, M.R., 1982, Potential Effects of Surface Coal Mining on the Hydrology of the Cook Creek Area, Ashland Coal Field, Southeastern Montana, USGS Open File Report 82-681, Helena, Montana.

Conner, C.W. 1981. "Cross Sections, Mammoth Coal Bed and Rehder Tongue of Mammoth Coal Bed, Bull Mountain Coal Field, Montana." Open File Report 81-190.

Conner, C.W. 1980. "Mammoth Coal Bed, Paleocene Fort Union Formation Bull Mountains, Musselshell and Yellowstone Counties, Montana." Open File Report 80-711.

Cook, C.W. 1966. "The Role of Carbohydrate Reserves in Managing Range Plants." Utah State University Agricultural Experiment Station, Mimeograph 499, Logan, Utah.

Desborough, G.A.; Poole, F.G.; and Green, G.N. 1981. "Metalliferous Oil Shales in Central Montana and Northeastern Nevada." Open File Report 81-121, United States Department of the Interior, Geological Survey.

Dollhopf, D.J. 1979, personal communication, Montana Agricultural Experiment Station, Montana State University, Bozeman.

Duff, D.A. 1977. Livestock grazing impacts on aquatic habitat in Big Creek, Utah. Bureau of Land Management, USDI, Salt Lake City, Utah (page 49).

Dusek, G.L. 1978. "Bull Mountains Coal Field Study: Final Report." Montana Department of Fish and Game.

Dyksterhuis, E.J. 1951. "Use of Ecology on Rangeland." *Journal of Range Management*, 4(5):65-75.

Edminster, F.C. 1954. *American Game Birds of Field and Forest; Their Habitats, Ecology, and Management*. Charles Scribner's Sons, New York, pp. 135-167.

Eng, R.L.; Jones, J.O.; and Gjersing, F.M. 1979. Construction and Management of Stockponds for Waterfowl. Bureau of Land Management, Technical Note No. 327.

Gifford, G.F. 1975. "Beneficial and Detrimental Effects of Range Improvement Practices on Runoff and Erosion." In Watershed Management. A Symposium. American Society of Civil Engineers, Logan, Utah. pp. 216-48.

Gill, R.B. 1965. "Distribution and Abundance of a Population of Sage Grouse in North Park, Colorado." M.S. Thesis, Colorado State Univ., Fort Collins.

Harris, W.L. 1972. "Upper Mississippian and Pennsylvanian Sediments of Central Montana." University of Montana, Missoula, Montana, unpublished PhD. dissertation.

Hewlett, John D. and Nutter, Wade L. 1969. *An Outline of Forest Hydrology*. University of Georgia Press.

Hills, Gordon C. December 1977. "Musselshell River Study Report Prepared for Statewide 208 Project." Montana Water Quality Bureau, p. 6.

Holechek, J. 1980. "Livestock Grazing Impacts on Rangeland Ecosystems." *Journal of Soil and Water Conservation*, 35(4):162-64.

Hormay, A.L. 1970. *Principles of Rest Rotation Grazing and Multiple Use Land Management*. U.S. Forest Service (USDA) Training Text 4 (2200), Washington, D.C.

Houston, W.R. and Woodward, R.R. 1966. "Effects of Stocking Rates on Range Vegetation and Beef Cattle Production in the Northern Great Plains." Agricultural Research Service (USDA) Technical Bulletin 1357, Washington, D.C.

Janson, R.F. and Greene, R. 1971. "Ring-necked Pheasant." *Game Management in Montana*. Montana Department of Fish and Game, Helena, Montana.

Johnsgard, P.A. 1973. *Grouse and Quails of North America*. University of Nebraska, Lincoln, Nebraska, pp. 300-319.

Digitized by Google

Johnson, A. and Smoliak, S. 1979. "Grazing Systems for Alberta Ranges." Alberta Department of Agriculture Publication Number 134/14. Calgary, Alberta, Canada.

Johnson, S.R.; Gray, H.L.; and Ponce, S.L. 1978. "Range Cattle Impacts on Stream Water Quality in the Colorado Front Range." U.S. Forest Service (USDA) Research Note RM-359, Fort Collins, Colorado.

Julander, O. 1966. "How Mule Deer Use Mountain Range in Utah." Utah Acad. Sci. Arts Letters, 43(2):22-28.

Knapp, N.C. 1956. "Devil's Basin Oil Field, Musselshell County, Montana." Billings Geological Society Seventh Annual Field Conference.

Knappen, R.S. and Moulton, G.F. 1930. "Geology and Mineral Resources of Parts of Carbon, Big Horn, Yellowstone, and Stillwater Counties, Montana." United States Geological Survey Bulletin 822, p. 1-70.

Knowles, C.J. 1975. Range Relationships of Mule Deer, Elk, and Cattle in a Rest-Rotation Grazing System during Summer and Fall. M.S. Thesis, Montana State University, Bozeman, Montana.

Komberec, T.J. 1976. Range Relationships of Mule Deer, Elk, and Cattle in a Rest-Rotation Grazing System during Winter and Spring. M.S. Thesis, Montana State University, Bozeman, Montana.

Kuck, P.H. 1982. *Vanadium: Mineral Commodity Summaries*. Bureau of Mines, United States Department of the Interior.

Lodge, R.W. and Campbell, J.B. 1965. *The Point Method and Forage Yield Tables for Determining Camping Capacity*. Saskatchewan Animal and Pasture Sciences Experimental Farm, Swift Current, Saskatchewan, Canada.

Lodge, R.W.; Smoliak, S.; and Johnson, A. 1972. *Managing Crested Wheatgrass Pastures*. Agriculture Canada Publication 1473, Ottawa, Ontario, Canada.

Loendorf, L.L. 1971. "The Results of the Archeological Survey in the Pryor Mountains—Bighorn Canyon National Recreation Area, 1969 Field Season." Manuscript on file, National Park Service, Midwest Archeological Center, Lincoln.

Mackie, R.J. 1970. Range Ecology and Relation of Mule Deer, Elk, and Cattle in the Missouri River Breaks, Montana. Wildlife Society, Wildlife Monograph 20. Washington: The Wildlife Society.

Martin, N.S. 1970. Sagebrush Control Related to Habitat and Sage Grouse Occurrence. *J. Wildlife Management*, 34:313-320.

Moran, S.R.; Cherry, J.A.; Rehm, B. and Groenewold, G.H., 1979, Hydrologic Impact on Surface Mining of Coal in Western North Dakota, Symposium on Surface Mining Hydrology, Sedimentation and Reclamation, University of Kentucky, Lexington, Kentucky.

Montana Department of Health and Environmental Sciences, 1982, Montana Water Quality, Helena, Montana.

Montana Department of State Lands. 1980, Montana's Permanent Program Strip and Underground Mine Reclamation Rules and Regulations, Helena, Montana.

McCouney, R.J., 1976. Public land grazing and ranch economics. Agricultural Economic and Economics Department Staff Paper 76-10, Montana State University, Bozeman, Montana.

Morcuson, P.E. 1977. The Effect of Cattle Grazing on Brown Trout in Rock Creek, Montana. Project Report F-20-R-21-11a. Prepared for Montana Dept. of Fish and Game. Helena, Montana: Montana Dept. of Fish and Game.

Moring, John R. and Lantz, Richard L. 1975. "Alsea Watershed Study: Effects of Logging on the Aquatic Resources of Three Headwater Streams of the Alsea River, Oregon." Fishery Research Report IX, Oregon Department of Fish and Wildlife, Corvallis, Oregon.

O'Brien, Robert. 1973. *Big Horn Canyon National Recreational Area: Appraisal of Mineral Potential of Offered and Selected Lands*. U.S. Geological Survey.

Patterson, R.L. 1952. *The Sage Grouse in Wyoming*. Sage Books, Inc., Denver, Colorado.

Pechanec, Joseph F.; Stewart, George; and Blaisdell, James P. 1954. "Sagebrush Burning—Good and Bad." USDA, Farmer's Bulletin No. 1948.

Perry, C.S. 1962. "Montana in the Geologic Past." Montana Bureau of Mines and Geology, Bulletin No. 26.

Platts, W.S. 1978. Livestock interactions with fish and aquatic environments. Cal-Neva Wildlife Transactions, U.S. Fish and Wildlife Service, Sacramento, California, p. 49.

Pressler, J.W. 1982. *Gypsum: Mineral Commodity Summaries*. Bureau of Mines, United States Department of the Interior.

Ralphs, M. and Busby, F.E. 1978. Prescribed Burning: Vegetative Change, Forage Production, Costs, and Return of Six Demonstration Burns in Utah. Journal of Range Management (in process).

Rauzi, F. and Hanson, C.L. 1966. "Water Intake and Runoff as Affected by Intensity of Grazing." *Journal of Range Management*, 19(6):351-56.

Reeves, F. 1931. "Geology of the Big Snowy Mountains." United States Geological Survey, Professional Paper 165-D.

Rioux, Ronald P. and Dodge, Kent A. 1979. *Hydrologic Data from the Bull Mountains Area, South-Central Montana*. U.S. Geological Survey.

Ryerson, D. 1970. "Clubmoss on Montana Rangelands." Montana State University Agricultural Experiment Station Bulletin 645, Bozeman, Montana.

. Houlton, H.A.R. and Wambolt, C.L. 1980. Range Improvement Tools. Montana State University Agricultural Experiment Station. Bozeman, Montana.

Digitized by Google

. Taylor, J.E. and Houlton, H.A.R. 1974. *Mechanical Range Improvement Methods in Montana.* Montana State University Agricultural Experiment Station, Miscellaneous Publication, Bozeman, Montana.

. Taylor, J.E. 1974. *Rangeland Fertilization in Montana—a Literature Review.* Montana State University Agricultural Experiment Station, Bozeman, Montana.

. Houlton, H.A.R. 1979a. *Field Day Report, South Liberty County, Pugsley Rancher, Inc. Broadhurst Ranch, Montana.* Montana State University Agricultural Experiment Station, Bozeman, Montana.

. Houlton, H.A.R. 1979b. *Soil Moisture Studies. Addition to Field Day Report, South Liberty County, Pugsley Rancher, Inc. Broadhurst Ranch, Montana.* Montana State University Agricultural Experiment Station, Bozeman, Montana.

. Houlton, H.A.R. and Wambolt, C.L. 1980. *Range Improvemental Tools.* Montana State University Agricultural Experiment Station. Bozeman, Montana.

Skovlin, John. 1982. *Impacts of Grazing on Wetlands and Riparian Habitat, the State of the Art.* Pacific NW Forest and Range Experiment Station, U.S. Forest Service (USDA), Oregon, p. 4.

Smeins, F.E. 1975. "Effects of Livestock Grazing on Runoff and Erosion." In Watershed Management, a Symposium. American Society of Civil Engineers, Logan, Utah. pp. 267-74.

Smith, M.A. and Busby, F. Prescribed Burning: Effective Control of Sagebrush in Wyoming. Agricultural Experiment Station of Wyoming. RJ-165, March 1981.

South, P. 1974. "Pryor Mountain Ecosystems." Manuscript on file, Custer National Forest, Billings, Montana.

Swank, W.G. 1958. "The Mule Deer in Arizona Chaparral." Arizona Game and Fish Department, Wildlife Bulletin No. 3.

Thompson, Keith S. August 1982. *Hydrology of the Bull Mountains Area, South-Central Montana, with Special Reference to the Hydrologic Effects of Coal Mining.* Montana Bureau of Mines and Geology, Draft.

United States Bureau of Reclamation, 1982, Pumpkin Creek Study Area: Resource and Potential Reclamation Evaluation, Billings, Montana.

United States Department of Agriculture, Soil Conservation Service. *National Engineering Handbook,* Section 4, Hydrology, August 1972.

United States Department of the Interior, Bureau of Land Management, Memorandum—"Estimated Runoff from Public Lands—Proceedings from Fort Meade Watershed Workshop." October 10, 1968.

. 1982. *Land Pattern Review and Land Adjustment.* Billings, Montana.

United States Department of the Interior, Bureau of Reclamation. Report on Resources of Eastern Montana Basins (August 1982).

United States Department of the Interior, Fish and Wildlife Service, 1978. *Terrestrial Habitat Evaluation Criteria Handbook Ecoregion M313, Southern Rocky Mountains.*

United States Department of the Interior, Geological Survey. *Water Resources Data for Montana.*

United States Environmental Protection Agency and Bureau of Land Management. 1979. *Livestock Grazing Management and Water Quality Protection* (State of the Art Reference Document).

United States Geological Survey and Montana Department of State Lands, 1979, Northern Powder River Basin Coal, Montana, draft environmental statement regional analysis, Helena, Montana.

Vallentine, J.F. 1971. *Range Development and Improvements.* Provo, Utah: Brigham Young University Press.

VanVoast, W.A., 1982, An Update on Mine Spoils Hydrology, Southeastern Montana, for the Symposium on Surface Coal Mining and Reclamation in the Northern Great Plains, Montana Bureau of Mines and Geology, Billings, Montana.

VanVoast, W.A.; Hedges, R.B. and McDermott, J.J., 1977, Hydrogeologic Conditions and Projections Related to Mining Near Colstrip, Southeastern Montana, Montana Bureau of Mines and Geology Bulletin 102, Butte.

VanVoast, W.A., and Thompson, K.S., 1982, Estimations of Postmining Water Quality for the Tongue River, Montana and Wyoming, Upstream from Tongue River Dam, Montana Bureau of Mines and Geology Open File Report 85, Butte.

Verme, L.J. 1969. Reproductive patterns of white-tailed deer related to nutritional plane. *Journal of Wildlife Management,* 33(4):129-136.

Wallestad, R.O. and Pyrah, D. 1974. "Movement and Nesting of Sage Grouse Hens in Central Montana." *J. Wildlife Management,* 38:630-633.

Wallestad, R.O. and Schladweiler, P. 1974. "Breeding Season Movements and Habitat Selection of Male Sage Grouse." *J. Wildlife Management,* 38:634-637.

Willard, E.E. and Herman, L. 1977. "Influence of Grazing by Various Systems on Vegetation and Soils in the Missouri River Breaks Area, Montana." Cooperative report BLM (USDI) and the University of Montana, Missoula, Montana.

Wilson, F.S.; Thomas, O.O.; and Jacobson, N.A. 1972. "Beefing Up Your Cattle Profits Through Nutrition and Management." Montana State Cooperative Extension Bulletin 339, Bozeman, Montana.

Woolsey, Lt.; Richards, R.W.; and Lupton, C.T. 1917. "The Bull Mountain Coal Field." United States Geological Survey, Bulletin 647.

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